

# What people study when they study Twitter

---

## *Classifying Twitter related academic papers*

### **Structured Abstract**

#### **Purpose**

Since its introduction in 2006, messages posted to the microblogging system Twitter have provided a rich dataset for researchers, leading to the publication of over a thousand academic papers. This paper aims to identify this published work and to classify it in order to understand Twitter based research.

#### **Design/methodology/approach**

Firstly the papers on Twitter were identified. Secondly, following a review of the literature, a classification of the dimensions of microblogging research was established. Thirdly, papers were qualitatively classified using open coded content analysis, based on the paper's title and abstract, in order to analyze method, subject, and approach.

#### **Findings**

The majority of published work relating to Twitter concentrates on aspects of the messages sent and details of the users. A variety of methodological approaches are used across a range of identified domains.

#### **Research Limitations**

This work reviewed the abstracts of all papers available via database search on the term "Twitter" and this has two major implications: 1) the full papers are not considered and so works may be misclassified if their abstract is not clear, 2) publications not indexed by the databases, such as book chapters, are not included. The study is focussed on microblogging, the applicability of the approach to other media is not considered.

#### **Originality/value**

To date there has not been an overarching study to look at the methods and purpose of those using Twitter as a research subject. Our major contribution is to scope out papers published on Twitter until the close of 2011. The classification derived here will provide a framework within which researchers studying Twitter related topics will be able to position and ground their work.

### **Keywords**

Twitter, Microblogging, Abstracts, Papers, Classification, Social Network Systems

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

## **Paper type**

Research paper

## Introduction

A number of social networking services (SNS) exist (boyd and Ellison, 2007) which have a range of features that allow users to share and exchange messages, fitting into the broader terrain of social network theory (Merchant, 2011). SNS are sometimes referred to as online social network services (OSN) (Ellison et al., 2007) and they can be divided into a number of sub-areas depending on functionality and practice. With the growing availability of easily accessible and low cost mobile technology, a niche area has developed known generically as microblogging. The use of microblogs has become a means of real time commenting on, responding to, and amplifying the impact of current events. The term "microblogging" was initially used in the early 2000s across a number of websites, and later started to appear in academic papers (Erickson, 2007, Java et al., 2007, Krishnamurthy et al., 2008). With the introduction of applications such as Twitter and Jaiku (Java et al., 2007) microblogging became more popular. By 2008 Twitter had become mainstream (Zhao and Rosson, 2009) and continues to be by far the most widely used platform.

Twitter allows users to rapidly communicate information in up to 140 characters on a one-to-one, specified group or global basis. The ease of use and essentially instantaneous nature of Twitter has made it a media for sharing news, or reports about events, ranging from the mundane (*what I had for breakfast*) through emerging information about politics (*the Arab spring*) to helping dealing with emergencies (*Japanese earthquake*) (Muralidharan et al., 2011). Events that were once closed become open to a much larger community: this has advantages such as increasing the audience for the message, mobilizing people into action, and enabling those unable to attend an event to share in the community (Dork et al., 2010). However, Twitter also brings about some interesting social issues linked to etiquette and potential misuse (Ross et al., 2011).

The openness and availability of messages posted to Twitter has provided a rich dataset for academic researchers from a variety of disciplines to study. Research ranges from the statistical through to the anthropological. This paper seeks to classify academic research on Twitter related topics based on an analysis of the abstracts of over a thousand papers published between 2007 and 2011 on the topic. Search techniques for papers related to Twitter were considered and a corpus of papers were identified, then a grounded research approach was used to identifying classifications of the work presented.

## Literature Review

The literature review has been used as an integral part of the research process providing an initial foundation for a new research topic.

### Microblogging and Twitter

Much of the published academic work on microblogging has focussed on the Twitter platform, with only a relative small percentage of academic papers on Twitter using any variant of the term microblog (see Table 1).

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

**Table 1 Numbers of Academic Papers relating to Microblogging and Twitter published between 2007 and 2011**

Search Term	Databases	Search area	Items returned
micro-blogging OR micro-blog OR microblogging OR microblog	Scopus ( <a href="http://www.info.sciverse.com/scopus">http://www.info.sciverse.com/scopus</a> )	Article Title, Abstracts, Keywords	436
twitter OR tweet	Scopus	Article Title, Abstracts, Keywords	1428
overlap	Scopus	Article Title, Abstracts, Keywords	276
micro-blogging OR micro-blog OR microblogging OR microblog	Web of Science (Part of the Web of Knowledge <a href="http://wok.mimas.ac.uk/">http://wok.mimas.ac.uk/</a> based on the Science Citation Index, the Social Sciences Citation Index and the Arts and Humanities Citation Index)	Topic	137
twitter OR tweet	Web of Science	Topic	529
overlap	Web of Science	Topic	81
micro-blogging OR micro-blog OR microblogging OR microblog	Google Scholar ( <a href="http://scholar.google.com">http://scholar.google.com</a> )	No control over search fields	About 10,400
twitter OR tweet	Google Scholar	No control over search fields	About 230,000
overlap	Google Scholar	No control over search fields	About 8,490

A small number of the Twitter papers returned by Scopus and Web of Science are not about the microblogging system, for example (Atencio et al., 2007) addresses vocal communication in owl monkeys: they "twitter". Google Scholar does not allow the search to be limited to specific fields and so returned a lot of papers which were not related to the microblogging system, including several where the author had the surname "Tweet", and lower down in the results

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

returned a large number of web pages where frames surrounding an article had links to Twitter. All academic papers found published prior to 2007 did not relate to microblogging, so Table 1 is limited to papers published between 2007, the year the first academic papers on microblogging (and Twitter) appeared, and 2011, the last full calendar year before this paper was written.

## Definitions

Ross et al. (2011) have conducted an extensive literature review of published work on microblogging and Twitter, giving this definition of microblogging:

"Microblogging is a variant of blogging which allows users to quickly post short updates, providing an innovative communication method that can be seen as a hybrid of blogging, instant messaging, social networking and status notifications. The word's origin suggests that it shares the majority of elements with blogging, therefore it can potentially be described using blogging's three key concepts (Karger and Quan, 2005): the contents are short postings, these postings are kept together by a common content author who controls publication, and individual blog entries can be easily aggregated together."

As well as incorporating characteristics of blogging, microblogging sites (such as Twitter) have elements of SNS (boyd and Ellison, 2007), with users able to construct profiles (Hughes et al., 2011) and establish and share connections with other users (Gonçalves et al., 2011). The short updates posted on microblogging sites are of limited lengths. Twitter posts are limited to 140 characters because of the original limits on short messages on mobile phones (Weller, 2011); in addition to this they sometimes have other features, with the microblogging systems Mycrocosm allowing users to share simple statistical graphs (Assogba and Donath, 2009).

User practices have had an impact on the functionality available in microblogging sites. Cormod et al. (2010) express user generated changes in the way Twitter is used:

"What about Twitter, the minimalist site based on micro-content sharing — ... the usage of the service has evolved more complex structures: follower/following relationships, targeted replies, hashtags to group tweets, re-tweeting and more. The disparate modes of access (Web, various smartphone apps, SMS) further complicate the model."

Wenger et al. (2009) report that the use of the @ symbol in front of a Twitter user name to direct a post to an individual (while still appearing in the public stream) began in a conference setting in 2007 and was immediately picked up by the developers and incorporated into a replies page. The use of hashtags were adopted by users as a way of grouping messages (Weller, 2011). A retweet button was introduced in to Twitter following users having developed a practice of amplifying messages of others by re-posting the message (boyd et al., 2010).

## Classifications

Cormod et al. (2010) and Cheong and Ray (2011) classify research on Twitter and other microblogging platforms as having two central objects: the user

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

domain (the sender of the tweet) and the message domain ("the tweet itself"). Cheong and Lee (2010) identify that the majority of Twitter-based research is within the message domain. Cormod et al. (2010) further divides research into the "first studies in Twitter" and the "next set of papers". The early work is seen as characterizing Twitter focusing on the properties relating to the domains of user and message, including quantitative studies of: the number of tweets; the number of followers and followings; times of postings; and location of posts. The next set includes linguistic and semantic analysis of tweets and identifiable conversations.

Barnes and Bohringer (2011) classify previous research on Twitter and microblogging into two broad areas: 1) understanding microblogging; 2) microblogging in special use cases. These areas are further sub-divided as:

- 1 a) Descriptive and statistical research about Twitter, including: the initial works (Erickson, 2007, Java et al., 2007, Krishnamurthy et al., 2008); studies of usage practices such as @ replies (Honeycutt and Herring, 2009) and retweeting (boyd et al., 2010).
- 1 b) Model building, for example Erickson (2008)
- 2 a) Enterprise Microblogging, based largely around round case studies (Barnes et al., 2010, Zhang et al., 2010).
- 2 b) Computer Science-oriented research, based around the technologies supporting microblogging (Passant et al., 2008, Assogba and Donath, 2009).

Dann (2010) highlights that there are a number of research papers relating to applications of Twitter in areas such as: health community, politics and government, business, education and learning, journalism, and eyewitness accounts of news stories. Examples of such papers includes work that: predicts flu trends (Achrekar et al., 2011); studies communication within government agencies (Wigand, 2010); investigates the different use by engaged and less engaged companies (Wigley and Lewis, 2012); researches detection and reaction to disasters (Muralidharan et al., 2011, Sakak et al., 2010); and experiments with the use of microblogging in higher education (Ebner et al., 2010). Work presented varies in the size, depth and length of studies. Zhao and Rosson (2009) investigated the use of microblogging in informal communication at work by using semi-structured telephone interviews with eleven subjects over four months, Erickson (2008) studying social translucence used a data set consisting of "total posts (N=1145) produced by ten Twitter subjects over a four-week period" personally interviewing subjects, while Dodds et al. (2011) investigating happiness used a data set consisting of: "over 46 billion words contained in nearly 4.6 billion expressions posted over a 33 month span by over 63 million unique users" using Amazon's Mechanical Turk (<http://www.mturk.com>) human intelligence work force to conduct the analysis. Collecting data has provided challenges reported in a number of papers, some papers present tools (Whitelaw et al., 2011) or repositories designed to help other researchers (Petrovi et al., 2010, Naveed et al., 2011). However Twitter's terms and conditions have limited access to such resources, such as Twapper Keeper (<http://twapperkeeper.com>) which is no longer freely available. Many researchers have followed advice from various sources (Russell, 2011b, Russell,

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

2011a) and devised their own scripts for collecting data from the Twitter API. Non-Twitter based research still had challenges collecting data but were often able to have direct contact with the data owners (Barnes et al., 2010).

There are a number of papers in academic publications that do not fit into the areas considered above, these are papers that are general introductions or discussions. For example DeVoe (2009) explains how microblogging can be used in libraries, while McFedries (2007) - one of the earliest papers on microblogging - explains what it is and how it may be used. There are a number of papers in widely respected publications that consider the potential of microblogging and Twitter, for example in articles such as "Spies to use Twitter as crystal ball" considering the espionage use of social media (Weinberger, 2011), "Trial by Twitter" which addresses reputation issues for authors of academic papers (Mandavilli, 2011) and "Twitter thou doeth?" discussing the potential minefield for litigation arising from the use of Twitter (Kierkegaard, 2010).

## Our Classification

Based on our review of the literature we have identified that microblogging has four aspects that researchers consider, which are presented below with a simple example of each:

1. **Message:** the text that the user enters and associated metadata identifying such things as the time sent (Cormod et al., 2010, Cheong and Ray, 2011, Barnes and Bohringer, 2011).  
An example would be a researcher considering occurrences of a particular set of words across a random sample of tweets.
2. **User:** aspects of the user's digital identity exposed by the microblogging system, which may include details of who the user follows, and their profile (Cormod et al., 2010, Cheong and Ray, 2011, Barnes and Bohringer, 2011, Hughes et al., 2011).  
An example would be a study of the number of followers who were also following a particular individual.
3. **Technology:** ranging through the underlying hardware used to implement the system through any APIs to the software the user interacts with to send messages (Barnes and Bohringer, 2011, Passant et al., 2008, Assogba and Donath, 2009).  
An example would be a researcher who had developed and trialed a new way of interfacing with Twitter.
4. **Concept:** encompassing introductory overviews, discussion pieces through to reviews, for example McFedries (2007), Mandavilli (2011), (Cheong and Ray, 2011). This paper would be classified as a Concept paper, as would a review of how Twitter could be used in a particular setting such as a library.

In addition researchers consider:

- **The domain:** Studies are undertaken from a number of different standpoints and often within a domain or a group of domains (Dann, 2010).

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- The data: the size, depth and length of studies (Dodds et al., 2011, Erickson, 2008, Zhao and Rosson, 2009) impact on data collection, as does the way in which it is collected (Russell, 2011a).
- The method for their research, ranging from the use of coders to prepare data for content analysis (Waters and Jamal, 2011), through details of algorithm development (Avello, 2011) to papers predominantly on other topics but with an element of review of Twitter such as a study of accessibility of SNS that focus on Facebook (Buzzi et al., 2010).

Thus for our study we attempted to classify the aspect of an academic paper as predominantly one of these:

- Message
- User
- Technology
- Concept

With three free format fields:

- Domain
- Data
- Method

Plus an indicator as to whether the paper has: a focus on microblogging topics such as Twitter; includes mention of the topic; or is another topic but has a matching keyword.

These dimensions have similarities to conceptual models of information science which identify axes and parameters of specialisms (Hjørland, 2002, Tennis, 2003, Robinson, 2009). However here there is no attempt to define domain other than to use what Tennis (2003) describes as "common-sense parameters".

## Method

### Data collection

Researchers normally identify papers to consider by a number of methods such as searching in electronic databases, and chaining from existing papers. Ellis (1989) defined six characteristics of search by academic social scientists: "starting, chaining, browsing, differentiating, monitoring, and extracting", later extending the work to other disciplines, including engineering (Ellis and Haugan, 1997). Green (2000) reports humanities scholars often find resources "by following bibliographic references from documents already known to them or to their colleagues". The use of electronic databases is known to vary within domains (Talja and Maula, 2003, Tenopir et al., 2009). A number of authors have compared different databases and their use, primarily concentrating on the utility of Web of Science, Scopus and Google Scholar (Levine-Clark and Gil, 2009, Jacso, 2005), which are the most widely used.

The aim of this study was to locate academic papers on Twitter according to the classification above and identify characteristics within these classes. To ensure that the study was replicable it was decided to base it on database searches, for the period 2007 (when the first papers appeared on Twitter) to 2011 (the last complete year). There are known difficulties in social sciences and the



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

humanities that although books and monographs play an important role in research communication they are not indexed in major databases (Kousha and Thelwall, 2009), so it was decided to limit this study to journal articles and conference papers to ensure complete coverage of a particular format. Initial use of Google Scholar had produced many results where Twitter was mentioned on the web page, such as "Share this on Twitter" while the paper indexed itself was nothing to do with Twitter. Therefore this study was based on searches using the search word "Twitter" of Scopus and Web of Science, via our university library access, in both cases the search was based on abstract, keyword and title. Web of Science returned 384 items and Scopus 1132. Data cleansing was used to remove obvious duplicates, and items with missing data, leaving a total of 1161 items. The data cleansing was performed within an Excel spreadsheet; sorting on: year, first author name, other authors, paper title, abstract and then publication; adjacent identical items were treated as duplicates; and verified with EndNote (<http://www.endnote.com/>) to allow automatic detection of duplicates.

### Data Classification

Papers were qualitatively classified using open coded content analysis, based on the paper's title and abstract, a technique used by Miller et al. (1996). Open coded analysis was selected as it facilitates delineation of concepts (Corbin and Strauss, 2008), this approach is adapted from that used in grounded theory (Glaser and Strauss, 1967) where line by line coding produces label variables from within the data itself, allowing large amounts of data to be synthesized (Glaser and Strauss, 1967). This adapted approach has been successfully used in classification of Twitter data (Ross et al., 2011).

Each paper's title and abstract was read and re-read and classified according to the schema shown in Table 2.

**Table 2 Schema for classifying titles and abstracts of papers related to Twitter**

<b>Classification</b>	<b>Format</b>	<b>Details</b>
Topic	Fixed	F = focussed on microblogging/Twitter; P = partially; N = not on topic
Message	Number	1 = mainly on this, 2 – secondly on this
User	Number	1 = mainly on this, 2 – secondly on this
Technology	Number	1 = mainly on this, 2 – secondly on this
Concept	Number	1 = mainly on this, 2 – secondly on this
Domain	Free	Semicolon separated list of domain, such as health, software development
Data	Free	Indicator of type of data and size
Method	Free	Methodological approach to research indicated.

Where a paper was partially on topic, the other classifications were based on the proportion of work relating to microblogging, not the full study.

Through our analysis, we were able to derive and develop categories from the corpus data, for both domain and method. These categories are specific to the

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

Twitter paper corpus: they were decided upon through close examination of the corpus content. It is important to note that the stated goal of the coding was to hypothesize on the categorization of the paper, rather than to provide a descriptive evaluation of it.

## Findings

### Focus

Of the original 1161 papers reviewed 575 were found to have a focus on Twitter and related microblogging work; 550 included mention of the topic but it was not the focus, for example the paper entitled "Twittering on about social networking and babyfeeding matters" (Guy et al., 2010) was a cross social network investigation of potential for increasing traffic to websites related to babyfeeding, Twitter was considered alongside Facebook and Bebo. "Content is liberated!" (Goldstein and Romero, 2009) is an article about the publication *IEEE Spectrum* and its revamped online presence. Of the remaining papers: in 27 the reference to the term twitter was not related to microblogging but to other topics such as the sound monkeys and tractor engines make, the other 9 had identical titles and abstracts but had not been identified as duplicates in the original data cleansing due to differences in other fields, for example a conference paper also published in the employer's technical report series. The full list of papers considered is listed in the Appendix, separated into: 1) those papers that are Twitter-focussed, 2) those that mention Twitter, but do not focus on it, 3) those using the word twitter but are not related to microblogging.

The remainder of this paper concentrates on the 575 papers that focussed on Twitter and related microblogging research, below we use the term "Twitter-focussed" to refer to this group.

### Year published

The first Twitter-focussed papers published appeared in 2007, when a total of 3 papers were identified in this study, this number did not increase significantly in 2008 and 2009 where 8 and 36 papers respectively were identified. There was a significant increase with 210 identified in 2010 and 320 in 2011. This matches Cormod et al. (2010) grouping of "first studies in Twitter" and the "next set of papers". As the number of papers published increases we are reaching a point where individual researchers will not be able to be familiar with all the literature published. The aim of this paper, then, is to contribute to our understanding of approach and method in studying twitter by classifying the research in this corpus.

### Methods

From the abstracts, some thirty-three different research methods were initially identified as used in the published research. A number of abstracts reported using more than one method and hence the total of methods exceeds the number of papers. Studies of methods as a source for information retrieval have indicated that it would be very useful for documents to be classified by methods (Szostak, 2011), however this information is sometimes missing or presented

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

differently according to the domain (Szostak, 2008, Hjørland, 2008). Additionally we found while reviewing the abstracts that some authors provided much more detail of their methods than others, and that one abstract may only refer to undertaking analysis while another may specify that the researchers undertook content analysis and sentiment analysis on their corpus. Therefore an overarching set of four methods were defined embracing a set of approaches.

1. Analytic

Where the researchers had performed some type of analysis, such as content analysis [1,2], data analysis [3], semantic analysis [4], social network analysis [4]; with a quantitative or qualitative approach.

2. Design and Development

Where systems are proposed or built [5,6], which may be exploratory, including experimental [7] or a demonstrator [8]; a model [9,10] or simulation; a full design and implementation.

3. Examination

Where the authors had undertaken review and survey type [11] works, embracing approaches such as: biography, case study [12], essay, ethnography, evaluation, interview [10], investigation and longitudinal studies.

4. Knowledge Discovery

In which existing techniques from artificial intelligence [2], mathematics and statistics have been applied, for the purposes of data mining, text mining and natural language processing. In addition, embracing the development of new algorithmic [13] approaches to the above.

Across the group of 575 papers spread of methodological approaches is shown in Table 3.

**Table 3 Use of methods across Twitter-focussed papers in total, with an additional indication of where only one set of methods were used**

Method	Total	solely
Analytic	153	97
Design and Development	267	211
Examination	139	103
Knowledge Discovery	127	59

Note there are a number of abstracts where the methods used span two or three of these methodological approaches, none spread across all four, the column "Solely" indicates the number of times a single methodological approach was used. Most of the combinations of methods happened a relatively few times, the most noteworthy were:

- Knowledge Discovery methods were used in:
  - 24 papers alongside Analytic methods [2]
  - 28 papers alongside Design and Development
  - 7 papers with both Analytic and Design and Development
- Examination methods were used in:
  - 15 papers alongside Analytic
  - 11 papers alongside Design and Development [10]

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

Almost half the abstracts indicated that the work had an element which involved the Design and Development of a system, ranging from proposals, through experiments to full implementations. While Knowledge Discovery, incorporating existing techniques from artificial intelligence, mathematics and statistics, was most frequently combined with the other methodological approaches. Earlier work has not attempted to quantify the methods used in Twitter-focused work and so here we have shown for the first time the diversity of approaches and the spread of their usage.

### Aspects

Of the 575 Twitter-focused papers the spread over the aspects identified are shown in Table 4. Note the diagonals indicate that there was no secondary aspect and no papers were identified as having more than two aspects.

**Table 4 Combinations of Primary and Secondary aspects across the Twitter-focused papers, note the highlighted diagonals indicate there were no Secondary aspects**

	Message	User	Technology	Concept	Total Secondary
Message	266	66	12	0	78
User	80	55	2	0	82
Technology	3	0	45	1	4
Concept	1	0	0	44	1
Total Primary	350	121	59	45	

As we can clearly see the most studied topic is the Message [1,2,5] indicating that most research is done about the content of messages exchanged in Twitter. The second most studied topic is the User [8] with work relating to user profiles including lists of followings. Some 146 papers jointly considering the Message and the User (80 primary the Message [7] and 66 primarily the User [3,10]), linking investigations of content of messages with details of the tweeter and potential readers. While the Concept [11] is the least studied it should be noted that it is likely that the majority of Twitter-focused papers will have a literature review section that discusses conceptual issues, our classification is based on the features of the work highlighted in the title and abstract. There is a relatively small proportion of work studying the Technologies [6,13] and developing them further, this maybe in part due to the proprietary nature of Twitter and the limited access developers now have to its API.

Our results are in line with the work of Cheong and Lee (2010) who identified that the majority of Twitter-based research around the message. As with Cormod et al. (2010) and Cheong and Ray (2011) we identified a second central area of user, quantifying that a large proportion of authors address both the Message and the user: what people are saying, combined with who these people are. Other authors have not identified that there are a number of papers that do not

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

concentrate on the Message or the User, but rather are relating to Technology and Concept. Figure 1 summarises the division of primary aspects across all the Twitter-focused papers.

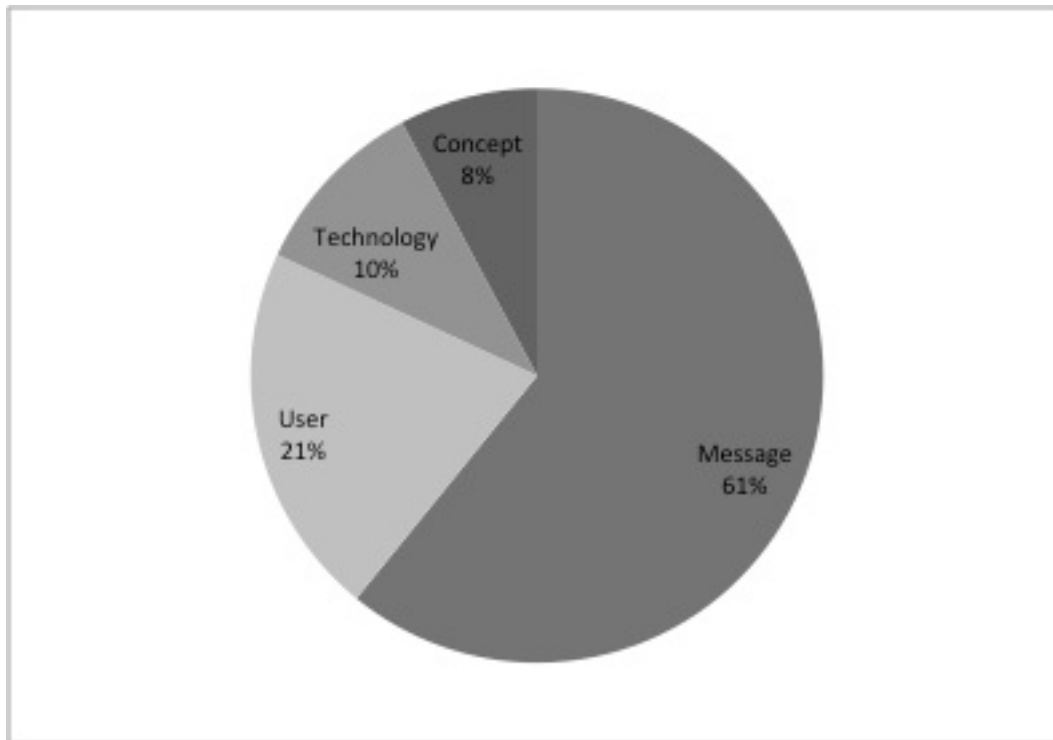


Figure 1 Pie chart summarising the division of primary aspects across all the Twitter-focused papers

### Methods and Aspects

The research methods used in papers that concentrate on different aspects were investigated and are summarised in Table 5, against the broad headings of methods previously identified and the aspects: Message, User, Technology and Concept.

Table 5 methods used in Twitter-focussed papers Investigating particular aspects

<i>Primary Aspect</i>	<b>Message</b>	<b>User</b>	<b>Technology</b>	<b>Concept</b>	<b>Total</b>
<b>Methods</b>					
<b>Analytic</b>	120	30	3		153
<b>Design and Development</b>	154	58	50	4	267
<b>Examination</b>	60	30	8	41	140
<b>Knowledge Discovery</b>	94	29	4		127

The majority of the Technology papers took a Design and Development methodological approach [6], with a number of authors presenting conference papers on systems that they have developed, and trialled. In comparison, the majority of Concept papers were based on Examination methods [11], including

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

reviews of systems. The majority of Message oriented papers took a Design and Development approach [5].

### Data

The majority of the Twitter-focussed abstracts (over 80%) did not provide any quantitative information of the data that was used in the study nor how it was collected. Phrases such as "large scale" could not be interpreted in comparison to the small number of studies which indicated orders of magnitude [5] or those giving precise details [15]. So within this study we are unable to report on results relating to the size and scope of data used in studies. This analysis therefore shows that those writing abstracts do not tend to elaborate enough on scope or method: the size of a corpus should be central to their research description.

### Domain

The initial classification of domains produced over 280 categories, many of which were only used a few times, the top categories are shown in Table 6.

**Table 6** The twenty most frequently used terms following the Initial Classification of domains

<b>Domain</b>	<b>total</b>
location	43
communication	29
health	29
search	29
spam	27
classification	25
education	23
politics	23
visualisation	20
sentiment	19
disaster	17
recommender	16
business	14
clustering	14
intelligence	14
libraries	13
marketing	13
semantic	12
influence	11
network	11
hashtag	10
Japan	10

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

The domains were therefore re-stratified into 13 broader categories, from this initial sift, to understand patterns in the data. Consolidation in this manner is a normal approach when an emergent coding approach is undertaken within content analysis (Stemler, 2001). This resulted in the following categories:

1. Business  
covering all commercial topics including public relations and marketing [16].
2. Classification  
encompassing papers that identify any patterns and clusters, including intelligence [13].
3. Communication  
ranging from communications between individuals to influencing others [3], to media such as TV and radio [1].
4. Education  
use in an educational context ranging from a formal university setting [12] to general public awareness.
5. Emergency  
covering unexpected circumstances [9], including disasters related to earthquakes and flooding.
6. Geography  
embracing place, named countries, culture and political aspects; along with the location of the user [9].
7. Health  
all health and medical issues [7].
8. Libraries  
including archives [11] and repositories.
9. Linguistics  
including syntax, semantics and sentiment, cultural protocol [4], and use in multilingual communities.
10. Search  
including recommenders, and trend recognition as well as manual and automated searches [17].
11. Security  
including SPAM, the use of automated tweeters (bot), as well as credentials, aspects of trust [8] and identity [10].
12. Technical  
embracing areas including the use of visualisation [6], networks and Twitter specifics such as hashtags.
13. Other  
all things not fitting in the above [5], including papers not grounded in a specific domain.

The Twitter-focused papers were then reallocated to these domains, where there was an apparent predominant domain that was chosen. In thirty-two cases there were two domains allocated, for example abstracts that were related to the education of health professions were classified as: Education; Health. It was not necessary to allocate more than two domains, and there were no particular pairs of domains that were predominant and so these pairings are not considered in

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

detail unless interesting data was observed. Figure 2 shows the number of papers allocated to each domain.

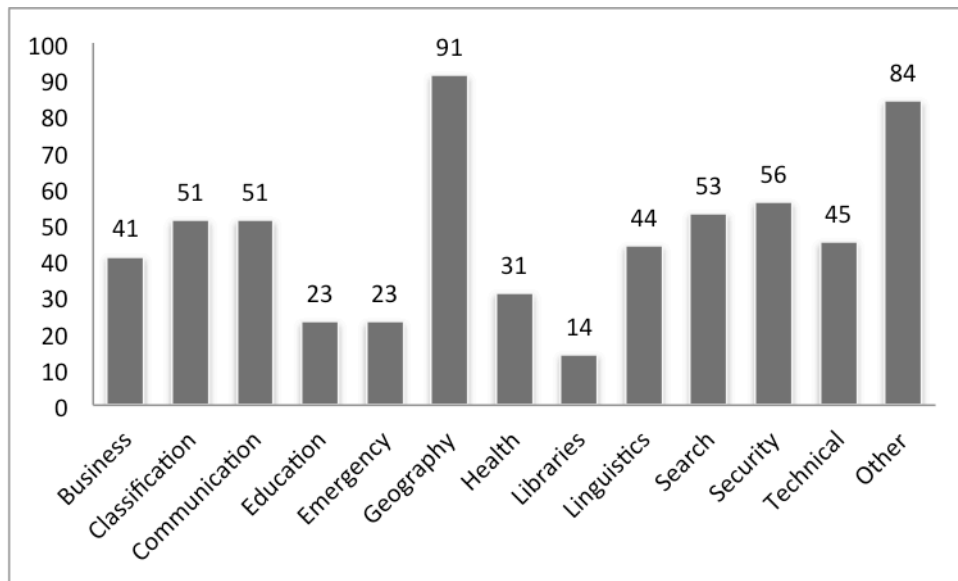


Figure 2 The stratified domains and the number Twitter-focussed Papers allocated to each

As can be seen Geography was the dominant domain with 91 of the 575 papers being related to place including named countries, the culture of the place and its politics; along with the physical location of the user. Eleven of the papers were joint with other domains, four of which were Emergency with papers addressing a particular incident in a place, and the researchers unable to identify whether the incident or place was dominant, other Emergency papers were clearly more about the incident and so were not allocated to Geography. "Other" was composed of varied areas including: tweeting pets and clothes, celebrity, and legal aspects, as within the abstract many appeared general and not in an identifiable specific domain.

These domains are in line with those identified by other researchers (Dann, 2010), however other stratifications could be chosen dividing larger categories and linking smaller ones, as is the nature of content analysis. We believe our stratification reflects the general categories people focus on when carrying out studies of Twitter based communication, based on the titles and domains of the publications in which the papers appear.

### Domain, Methods and Aspects

In Table 7 we summarise for each domain the percentages of the Twitter-focused papers that used each set of methods and concentrated on each aspect.



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

**Table 7 The methods Used and aspects Considered for each domain, expressed as percentages. Darker shading reflects larger percentage.**

	Method				Aspect			
	Analytic	Design and Development	Examination	Knowledge Discovery	Message	User	Technology	Concept
Business	32%	24%	37%	15%	56%	17%	2%	24%
Classification	27%	51%	12%	29%	75%	18%	8%	0%
Communication	29%	39%	18%	27%	59%	24%	8%	10%
Education	22%	57%	43%	9%	52%	30%	9%	9%
Emergency	26%	30%	30%	22%	91%	0%	4%	4%
Geography	30%	43%	15%	26%	68%	21%	9%	2%
Health	45%	23%	42%	23%	61%	16%	3%	19%
Libraries	7%	14%	86%	7%	21%	0%	7%	64%
Linguistics	45%	45%	16%	27%	80%	14%	7%	0%
Search	21%	55%	28%	25%	62%	26%	8%	4%
Security	27%	55%	18%	18%	55%	32%	13%	0%
Technical	22%	58%	16%	18%	51%	16%	31%	2%
Other	13%	54%	32%	19%	48%	26%	14%	12%
<b>Across all domains</b>	<b>27%</b>	<b>45%</b>	<b>25%</b>	<b>22%</b>	<b>61%</b>	<b>21%</b>	<b>10%</b>	<b>8%</b>

Note that because more than one method is identified as used in some papers the total for methods is more than 100% within single domains. Rounding the percentages to whole numbers also introduces minor inaccuracies to the table.

The shading in the table can be used to identify anomalies, for example in the Technology aspect column most cells are lightly shaded, the darkest at 31% is Technical. This can be seen as an indication that researchers in the Technical domain having a greater proportional interest in the Technology aspect, these researchers less interested in the use of Twitter but more in how underlying tools are designed and can be improved.

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

There are considerable differences with the choice of methods within the various domains compared to the average across all domains. Of particular note studies within the domain of Libraries, twelve of the fourteen studies use an Examination methodological approach, with little use of other methods. While in the domain of Health only seven of the thirty-one studied adopted a Design and Development method compared to 45% overall, there was a similar lack of selection of Design and Development methods within the domain of Business (ten from forty-one), perhaps reflecting within these domains that researchers are less likely to build experimental systems or simulations than in the other domains. Studies from both the Health and the Linguistics domains were based largely on Analytic methods with respectively fourteen out of thirty-one and twenty out of forty-four compared with an average of 27%, perhaps reflecting within both domains researchers frequently want to undertake quantitative and qualitative analysis of both data and content.

When looking at the aspects the domain of Libraries is again an outlier with ten of the fourteen studies concentrating on the Concept compared with an average of only 8%. The Emergency domain concentrates on the Message with twenty-one out of twenty-three compared to the average of 61%, possibly reflecting that in emergency situation Twitter is able to provide information when conventional news services are not fast enough or may not even be available.

A Pearson correlation is a statistical measure of association between two variables: calculated values of Pearson correlation always lie between +1 and -1, a positive value indicating the two variables increase together, a negative value indicating one increases as the other decreases. The closer the Pearson value is to 1 (or -1) the stronger the association. Considering the correlation between methods and aspects across domains give Pearson values as shown in Table 8.

**Table 8 The Correlation between methods and aspects across domains calculated as Pearson Values**

	<b>Message</b>	<b>User</b>	<b>Technology</b>	<b>Concept</b>
<b>Analytic</b>	0.86	0.55	0.25	-0.32
<b>Design and Development</b>	0.82	0.92	0.79	-0.21
<b>Examination</b>	0.23	0.58	0.30	0.68
<b>Knowledge Discovery</b>	0.97	0.76	0.48	-0.22

We see there is a particularly strong correlation between the use of Knowledge Discovery methods and studying the Message. Of course a correlation does not mean that there is a causal relationship, but it would be reasonable to suppose that the Knowledge Discovery methods are suited to handling large amounts of information and that Messages are source of large quantities of information. Likewise there is a strong correlation between User and the Design and Development methods. Figure 3 presents the correlation information data in a different form mapping the number of papers in each domain that use Knowledge Discovery methods against the number of papers focusing on the Message as the first series; the second series is a similar comparison of number

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

of papers in each domain using Design and Development methods compared to the number focusing on the User aspect.

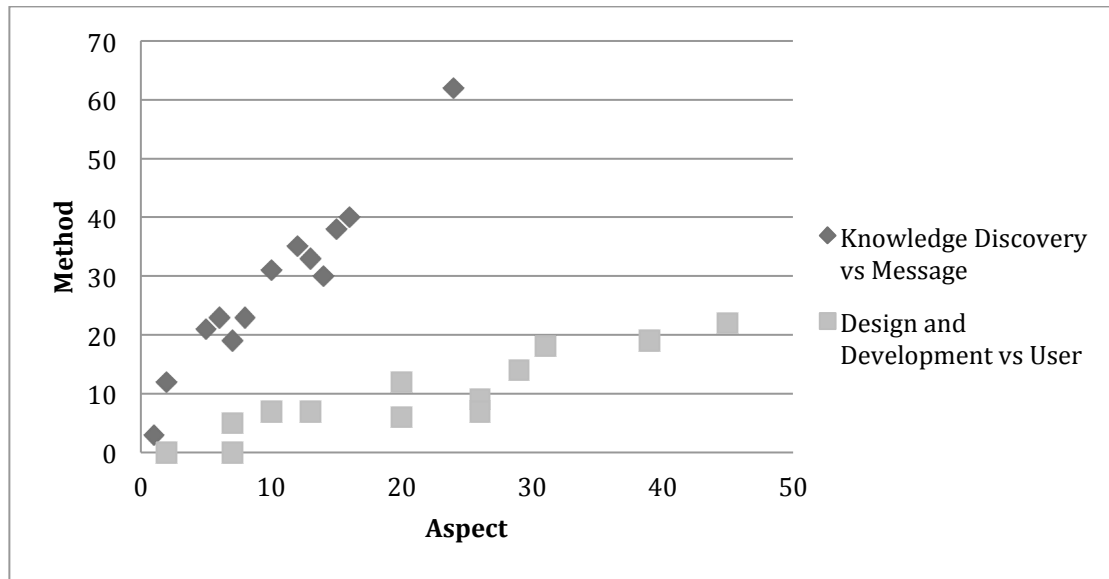


Figure 3 Number of Papers per domain for the Given method vs Number for the Given aspect

### Domain Characteristics

We used the text analysis portal TAPoR (<http://portal.tapor.ca>) and the Voyant (<http://voyant-tools.org/>) toolset to analyse the text within the abstracts for each of the domains and the full set of Twitter-focused abstracts. Frequencies of words were calculated for each set, having discounted common words and symbols using stop words from a list Taporware provide by TAPoR.

For all sets the most frequent word was "Twitter", so for the rest of this section we look at the next most frequent words. Table 9 shows the ten most frequent words. Examination of this list shows stemming has not taken place and that there are three variants of use (use, users and using), combining groups that should be stemmed and then selecting the next words gives the revised list in Table 10. Note "network" is now high in the list, it is often used in an abstract with the word "social" in phrases such as: "social network" and "social networking", in several cases these phrases were hyphenated. The list of words is not surprising and extending the list to more words did not reveal more. What was more interesting was the differences in the top ten between the full set and the individual domains. Table 11 lists distinct frequent words in the top ten of each domain that are not in the top ten for the set of all of the Twitter-focused abstracts.

Table 9 The Most Frequent Words across the full set of Twitter-focused Abstracts

Word	frequency
social	711
information	495
users	473
data	376
tweets	339

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

paper	320
use	274
messages	257
using	257
media	243

**Table 10** The Revised list of Most Frequent stemmed Words across the full set of Twitter-focussed Abstracts

Word	frequency
use	1004
social	711
tweet	543
network	498
information	495
data	376
message	323
paper	320
media	243
analysis	233

**Table 11** Lists of frequent words in the most frequent top ten each domain, but not in the top ten for the full set

Domain	Distinct Words
Business	Business, Marketing, Study
Classification	Topics, Microblogging
Communication	Influence, News, TV
Education	Students, Learning, Course, Microblogging, Education, Study
Emergency	Earthquake, Event, Public
Geography	Location, Event
Health	Health, Public, Antibiotic
Libraries	Libraries, Access, Microblogging, Reference, Public, Service, New
Linguistics	Sentiment, Approach, Show
Search	Search, Web, Results, Content
Security	Spam, Web, Based, Content
Technical	Based, New
Other	Model, Microblogging

The distinct words can largely be seen to have a obvious relationship to their domain: Students participate in Education, an Earthquake causes an Emergency, the existence of SPAM means Security needs to be considered.

We highlighted in the Literature Review that the word "Microblogging" is not as widely used as the word Twitter, but in four of the domains it is among the ten

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

most frequently used words within the abstracts, suggesting a more prevalent academic use of the term.

The word "New" is used in two domains: Libraries and Technical, where it is associated with new approaches within the discipline, this is different to the use of "News" in Communications where it is associated with current events. Automatic stemming would have occluded this difference.

The domains of Search and Security overlap on Web and Content as well as generic words, reflecting that researchers in these areas are particularly interested in material on the Internet.

Performing text analysis on the abstracts did not reveal any surprising results, rather it validated the stratification of domains and the allocation of abstracts to these. The topic of the domains were reflected by the words used within the abstracts.

## Conclusions

This work has undertaken a study of over one thousand papers related to Twitter, it is to the best of our knowledge the largest study of the area. We have established that approximately half the papers that are returned by searching major databases are not focussed on Twitter, instead contributing to wider studies, often in the general area of social networking. A small group of papers (~5%) are not to do with the microblogging system but are using the term "twitter" in other ways such as describing a noise made by animals and machinery.

We have classified the remaining Twitter-focussed papers according to their abstracts across three dimensions:

- Aspect: the aspect of Twitter primarily considered, which can be one of: Message, User, Technology, Concept.
- Method: a grouping of methodological approaches, classified as one or more of: Analytic, Design and Development, Examination, Knowledge Discovery.
- Domain: a stratified list of the researchers standpoint or field interest, made up of one or more of: Business, Classification, Communication, Education, Emergency, Geography, Health, Libraries, Linguistics, Search, Security, Technical, Other.

A fourth dimension, Data, was identified but there was not enough information provided within the abstracts to be able to attempt a classification of the quantity or quality of the data used in the studies, nor of how it was collected. The lack of this information shows that to many authors the size of the corpus or scope of their studies is not considered of sufficient importance to be included in when summarising their research

We have shown that the majority of papers (some 80%) concentrate their research around the Message and the User, considering the content of tweets and the people communicating. However, we are aware that beyond the abstract

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

most academic papers will include a literature review that in itself we would class as Concept. The Technology aspect is thus the most under-represented in the Twitter-focussed abstracts reviewed – perhaps reflecting the technical barriers to adoption in developing tools for the Twitter API.

Earlier work did not identify the research methods used within various Twitter-focussed studies. We have identified that there are a wide variety of methods used, and often one piece of work will use multiple methods. We have grouped these methods into four broad categories of methodological approaches: Analytic, Design and Development, Examination, Knowledge Discovery. The choice of methodological approaches varies within domains, but we note there is a strong correlation between the methodological approaches of the Knowledge Discovery domain and the study of the Message [2]. Also of interest is that the majority of the Technology papers took a Design and Development methodological approach, many of these works were presented at conferences with the authors describing systems that they have developed, and trialed.

A number of areas for future work have been identified, and will be considered further. This study was based on papers published between 2007 and 2011: in future years new papers should be added to the study, and a longitudinal study undertaken of changes that occur in the focus of work, particularly linked to changes in the affordances offered by Twitter and the tools used to access it. More information is needed about the data used in the research studies and how it is collected. However since this information is not widely present in abstracts a more detailed study will be needed within a sub-area: we will investigate the largest domain: Geography and by studying the full papers aim to identify the quantity of data and how it was collected, the more detailed study of this large area will also enable the identifications of sub-domains. Differences within domains have been highlighted and within each domain there are sub-domains which may have different approaches to the study of Twitter. The approach used in this study may be applicable to papers based on other existing and emerging social networking services, academic papers relating to these services will need to be collected and considered.

The classification derived here will provide a framework within which researchers studying development and use of Twitter will be able to position their work and against which those undertaking comparative studies of research relating to Twitter will be able to ground their work.

## Notes

In this section we present examples of papers which are classified according to the dimensions identified above, and provide some explanation in the form of a thumbnail sketch based on the paper's abstract. The papers are selected to demonstrate how classification was achieved.

1. Ferguson and Greer (2011) in a paper entitled "Local Radio and Microblogging: How Radio Stations in the U.S. are Using Twitter" mention in their abstract that they use content analysis methods to understand the

- use of Twitter by 111 local radio stations. The study was based on examining the contents of messages, the domain was initially identified as media and radio, but following stratification this became Communication.
2. Bollen et al. (2011) present a paper "Twitter mood predicts the stock market" which examines Twitter messages to forecast according to behavioural economics. Their approach uses Analytic methods including text analysis and Knowledge Discovery including those based on artificial intelligence.
  3. Khrabrov and Cybenko (2010) in the abstract of their paper "Discovering influence in communication networks using dynamic graph analysis" explain they use data analysis, within the domain of Communication. We identified the analysis is primarily on the user aspect but also the message to allow the researchers to uncover what they describe as "an ecosystem of users".
  4. Lindgren and Lundstrom (2011) use both semantic and social network analysis to understand linguistic nuances in their paper "Pirate culture and hacktivist mobilization: The cultural and social protocols of #Wikileaks on Twitter". Their abstract indicates this work is in the domain of discourse later stratified to Linguistics and that they concentrate on the message aspect.
  5. Dodds et al. (2011) in the abstract of their paper "Temporal patterns of happiness and information in a global social network: Hedonometrics and Twitter" describe the use of Analytic methods to examine expressions made in tweets, they use Design and Development methods to construct a system that will measure happiness. Their work focuses on the message aspect, their domain is happiness/hedonemeter which was stratified as Other. This is one of the few abstracts giving details of the data set (including 46 billion words in nearly 4.6 billion expressions) and the length of the study (thirty-three months), it does not detail how the data was collected.
  6. Dork et al. (2010) paper "A Visual backchannel for large-scale events" present the design of a system that will visualize Twitter data on what is called the back channel (that is not official) during large scale events such as sporting events and conferences. Their method is classed as Design and Development, their domain is Technical. They are particularly interested in the Twitter technology which they interact with but also the messages which they display.
  7. Sadikov et al. (2011) paper "Correcting for missing data in information cascades" consider the transmission of infectious diseases and the impact of identification due to missing data, they have built experimental tools which they have evaluated against 70 million Twitter nodes. The experimental nature led to classifying as a Design and Development methodological approach, the research was interested primarily in the message but also in the user. Because of the interest in infectious disease this was classed as Health.
  8. Yamasaki (2011) in the paper "A trust rating method for information providers over the social web service: A pragmatic protocol for trust among information explorers and information providers" describes a demonstrator system developed for rating trust among IT-engineers

based on the number of Twitter followers and other user oriented data. The paper is positioned within the domain of Security, because of the interest in trust, the method is Design and Development as a demonstrator system is described and the primary aspect is user as the interest is in the individual.

9. Gelernter and Mushegian (2011) work "Geo-parsing messages from microtext" is classified in both the domain geography and the domain emergency, with a primary aspect of message, as their work is about the type of locations that occur in disaster-related messages. They report the development of a model and so their method is classified as Design and Development.
10. Marwick and boyd (2010) paper "I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience" focuses primarily on the aspect of user but also considers the message. The paper addresses the imagined audience that Twitter users interact with. The domain was initially classed as digital identity but stratified to Security. Their initial approach involved talking to users and so the paper was deemed to use an Examination method, but they also develop a model and so used Design and Development methodological approaches.
11. Marshall and Shipman (2011) in their paper "Attitudes about Institutional Archiving of Social Media" report on the results of two surveys, one of which concentrated on respondents attitudes to the archiving and subsequent access of Twitter data. The domain was initially recognized as archiving, but this is not an area in which there are currently many Twitter-focused papers and so it was stratified to Libraries. The methodological approach was based on surveys and so the approach was classed as Examination. The research was generally about Twitter and so the paper was classed as the concept aspect.
12. Ebner et al. (2010) in the paper "Microblogs in Higher Education – A chance to facilitate informal and process-oriented learning?" present a case study of the use of microblogs by a group of students at an Austrian university. The research considers primarily the messages but also the users, the domain is clearly Education and the methodological approach being a case study is classed as Examination.
13. Bernstein et al. (2010) present a Twitter client they have developed in their paper "Eddi: Interactive topic-based browsing of social status streams". The work is based on a novel algorithm and so classed as using Knowledge Discovery methodological approach. The primary aspect of interest is technology with the message secondary. The domain was initially cast as topic search, but reexamining brought it into the broader strata Classification.
14. Naaman et al. (2010) examine the Tweets of over 350 users in their paper "Is it Really About Me? Message Content in Social Awareness Streams" identifying differences in the types of messages sent. The abstract does not identify the quantity of tweets analysed nor how they were collected.
15. Arakawa et al. (2010) in the abstract for their paper "Relationship Analysis between User's Contexts and Real Input Words through Twitter" specify they examined 421274 tweets collected between two given dates,



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

the data was collected by the then available Twitter streaming and search APIs.

16. Li et al. (2011) examined 22 official brands on the Chinese microblogging site (<http://t.sina.com>) in their paper "Brand tweets: How to popularize the enterprise Micro-blogs" presenting advice on how microblogging can be used in the domain of Business.
17. Chen et al. (2011) in their paper "TI: An efficient indexing mechanism for real-time search on tweets" consider the difficulties of real-time searching of Twitter data and introduce a new indexing scheme to assist. This technical paper is classified as belonging to the domain Search.

## References

- Achrekar, H., Gandhe, A., Lazarus, R., Ssu-Hsin, Y. and Benyuan, L. (2011), "Predicting Flu Trends using Twitter data", in *Computer Communications Workshops (INFOCOM WKSHPS)*, IEEE, pp. 702-707.
- Arakawa, Y., Tagashira, S. and Fukuda, A. (2010), "Relationship Analysis between User's Contexts and Real Input Words through Twitter", in *Globecom Workshops*, IEEE, pp. 1751-1755.
- Assogba, Y. and Donath, J. (2009), "Mycrocosm: Visual Microblogging", in *42nd Hawaii International Conference on System Sciences (HICSS)*, IEEE Computer Society, pp. CD-ROM 1-10.
- Atencio, C. A., Blake, D. T., Strata, F., Cheung, S. W., Merzenich, M. M. and Schreiner, C. E. (2007), "Frequency-modulation encoding in the primary auditory cortex of the awake owl monkey", *J Neurophysiol*, Vol. 98 No. 4, pp. 2182-95.
- Avello, D. G. (2011), "All liaisons are dangerous when all your friends are known to us", in *HT '11: Proceedings of the 22nd ACM conference on Hypertext and hypermedia*, ACM, pp. 171-180.
- Barnes, S. J. and Bohringer, M. (2011), "Modeling use Continuance Behavior in Microblogging Services: The Case of Twitter", *Journal of Computer Information Systems*, Vol. 51 No. 4, pp. 1-10.
- Barnes, S. J., Böhringer, M., Kurze, C. and Stietzel, J. (2010), "Towards an understanding of social software: the case of Arinia", in *43rd Hawaii International Conference on System Sciences (HICSS)*, IEEE Computer Society, pp. CD-ROM 1-9.
- Bernstein, M. S., Suh, B., Hong, L., Chen, J., Kairam, S. and Chi, E. H. (2010), "Eddi: Interactive topic-based browsing of social status streams", in *UIST 2010 - 23rd ACM Symposium on User Interface Software and Technology*, pp. 303-312.
- Bollen, J., Mao, H. and Zeng, X. (2011), "Twitter mood predicts the stock market", *Journal of Computational Science*, Vol. 2 No. 1, pp. 1-8.
- boyd, d. and Ellison, N. B. (2007), "Social Network Sites: Definition, History, and Scholarship", *Journal of Computer-Mediated Communication*, Vol. 13 No. 1, pp. 210-230.
- boyd, d., Golder, S. and Lotan, G. (2010), "Tweet, Tweet, Retweet: Conversational Aspects of Retweeting on Twitter", in *43rd Hawaii International*

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- Conference on System Sciences (HICSS)*, IEEE Computer Society, pp. CD-ROM 1-10.
- Buzzi, M. C., Buzzi, M., Leporini, B. and Akhter, F. (2010), "Is Facebook really "open" to all?", in *IEEE International Symposium on Technology and Society (ISTAS)*, pp. 327-336.
- Chen, C., Li, F., Ooi, B. C. and Wu, S. (2011), "TI: An efficient indexing mechanism for real-time search on tweets", in *Proceedings of the ACM SIGMOD International Conference on Management of Data*, pp. 649-660.
- Cheong, M. and Lee, V. (2010), "Dissecting Twitter: A Review on Current Microblogging Research and Lessons from Related Fields". In: Memon, N. & Alhaji, R. (eds.) *From Sociology to Computing in Social Networks: Theory, Foundations and Applications*. Springer-Verlag, New York, pp. 343 – 362.
- Cheong, M. and Ray, S. (2011), "A Literature Review of Recent Microblogging Developments", report, Clayton School of Information Technology, Monash University,  
<http://www.csse.monash.edu.au/publications/2011/tr-2011-263-full.pdf> (accessed 10 July 2012).
- Corbin, J. and Strauss, A. (2008) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, Sage Publications, , Thousand Oaks, CA.
- Cormod, G., Krishnamurthy, B. and Willinger, W. (2010), "A manifesto for modeling and measurement in social media", *First Monday*, Vol. 15 No. 9, available at:  
<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/3072/2601> (accessed 12 July 2012).
- Dann, S. (2010), "Twitter content classification", *First Monday*, Vol. 15 No. 12, available at:  
<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/2745/2681> (accessed 12 July 2012).
- DeVoe, K. M. (2009), "Bursts of Information: Microblogging", *The Reference Librarian*, Vol. 50 No. 2, pp. 212-214.
- Dodds, P. S., Harris, K. D., Kloumann, I. M., Bliss, C. A. and Danforth, C. M. (2011), "Temporal patterns of happiness and information in a global social network: hedonometrics and twitter", *PLoS One*, Vol. 6 No. 12, available at:  
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0026752> (accessed 12 July 2012).
- Dork, M., Gruen, D., Williamson, C. and Carpendale, S. (2010), "A Visual Backchannel for Large-Scale Events", *IEEE Transactions on Visualization and Computer Graphics*, Vol. 16 No. 6, pp. 1129-1138.
- Ebner, M., Lienhardt, C., Rohs, M. and Meyer, I. (2010), "Microblogs in Higher Education – A chance to facilitate informal and process-oriented learning?", *Computers & Education*, Vol. 55 No. 1, pp. 92-100.
- Ellis, D. (1989), "A Behavioural Approach to Information Retrieval System Design", *Journal of Documentation*, Vol. 45 No. 3, pp. 171-212.
- Ellis, D. and Haugan, M. (1997), "Modelling the information seeking patterns of engineers and research scientists in an industrial environment", *Journal of Documentation*, Vol. 53 No. 4, pp. 384-403.

- Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).
- Ellison, N. B., Steinfield, C. and Lampe, C. (2007), "The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites", *Journal of Computer-Mediated Communication*, Vol. 12 No. 4, pp. 1143-1168.
- Erickson, I. (2007), "Understanding socio-locative practices", in pp.
- Erickson, I. (2008), " The translucence of Twitter", in *Proceedings of the Ethnographic Praxis in Industry Conference*, American Anthropological Association, pp. 64-78.
- Ferguson, D. A. and Greer, C. F. (2011), "Local Radio and Microblogging: How Radio Stations in the U.S. are Using Twitter", *Journal of Radio and Audio Media*, Vol. 18 No. 1, pp. 33-46.
- Gelernter, J. and Mushegian, N. (2011), "Geo-parsing messages from microtext", *Transactions in GIS*, Vol. 15 No. 6, pp. 753-773.
- Glaser, B. G. and Strauss, A. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Aldine Publishing, Chicago, IL.
- Goldstein, H. and Romero, J. J. (2009), "IEEE Spectrum online: Content is liberated!", *Spectrum, IEEE*, Vol. 46 No. 7, pp. 10-10.
- Gonçalves, B., Perra, N. and Vespignani, A. (2011), "Modeling Users' Activity on Twitter Networks: Validation of Dunbar's Number", *PLoS ONE*, Vol. 6 No. 8, available at:  
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0022656> (accessed 12 July 2012).
- Green, R. (2000), "Locating Sources in Humanities Scholarship: The Efficacy of following Bibliographic References", *The Library Quarterly*, Vol. 70 No. 2, pp. 201-229.
- Guy, C., Paterson, A., Currie, H., Lee, A. J. and Cumming, G. P. (2010), "Twittering on about social networking and babyfeeding matters", *British Journal of Midwifery*, Vol. 18 No. 10, pp. 620-627.
- Hjørland, B. (2002), "Domain analysis in information science: Eleven approaches - traditional as well as innovative", *Journal of Documentation*, Vol. 58 No. 4, pp. 422-462.
- Hjørland, B. (2008), "Core classification theory: a reply to Szostak", *Journal of Documentation*, Vol. 64 No. 3, pp. 333-341.
- Honeycutt, C. and Herring, S. C. (2009), "Beyond Microblogging: Conversation and Collaboration via Twitter", in *42nd Hawaii International Conference on System Sciences (HICSS)*, IEEE Computer Society, pp. CD-ROM 1-10.
- Hughes, D. J., Rowe, M., Batey, M. and Lee, A. (2011), "A tale of two sites: Twitter vs. Facebook and the personality predictors of social media usage", *Computers in Human Behavior*, Vol. 28 No. 2, pp. 561-569.
- Jacso, P. (2005), "As we may search – Comparison of major features of the Web of Science, Scopus, and Google Scholar citation-based and citation-enhanced databases", *Current Science*, Vol. 89 No. 9, pp. 1537-1547.
- Java, A., Song, X., Finin, T. and Tseng, B. (2007), "Why we twitter: understanding microblogging usage and communities", in *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis - WebKDD/SNA-KDD '07*, pp. 56-65.
- Karger, D. R. and Quan, D. (2005), "What would it mean to blog on the semantic web?", *Web Semantics: Science, Services and Agents on the World Wide Web*, Vol. 3 No. 2-3, pp. 147-157.

- Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).
- Khrabrov, A. and Cybenko, G. (2010), "Discovering influence in communication networks using dynamic graph analysis", in, pp. 288-294.
- Kierkegaard, S. (2010), "Twitter thou doeth?", *Computer Law & Security Review*, Vol. 26 No. 6, pp. 577-594.
- Kousha, K. and Thelwall, M. (2009), "Google book search: Citation analysis for social science and the humanities", *Journal of the American Society for Information Science and Technology*, Vol. 60 No. 8, pp. 1537-1549.
- Krishnamurthy, B., Gill, P. and Arlitt, M. (2008), "A few chirps about Twitter", in *Proceedings of the 1st Workshop on Online Social Networks: WOSN'08*, ACM, pp. 19-24.
- Levine-Clark, M. and Gil, E. (2009), "A comparative analysis of social sciences citation tools", *Online Information Review*, Vol. 33 No. 5, pp. 986-996.
- Li, G., Cao, J., Jiang, J., Li, Q. and Yao, L. (2011), "Brand tweets: How to popularize the enterprise Micro-blogs", in *Information Technology and Artificial Intelligence Conference (ITAIC)*, IEEE, pp. 136-139.
- Lindgren, S. and Lundstrom, R. (2011), "Pirate culture and hacktivist mobilization: The cultural and social protocols of #WikiLeaks on Twitter", *New Media & Society*, Vol. 13 No. 6, pp. 999-1018.
- Mandavilli, A. (2011), "Trial by Twitter", *Nature*, Vol. 469 No. 7330, pp. 286-287.
- Marshall, C. C. and Shipman, F. (2011), "Attitudes about Institutional Archiving of Social Media", in *Archiving 2011: Preservation Strategies and Imaging Technologies for Cultural Heritage Institutions and Memory Organizations*, pp. 194-198.
- Marwick, A. E. and boyd, d. (2010), "I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience", *New Media & Society*, Vol. 13 No. 1, pp. 114-133.
- McFedries, P. (2007), "All A Twitter", *IEEE Spectrum*, Vol. 44 No. 10, pp. 84.
- Merchant, G. (2011), "Unravelling the social network: theory and research", *Learning, Media and Technology*, Vol. 37 No. 1, pp. 4-19.
- Miller, K. J., Fullmer, S. L. and Walls, R. T. (1996), "A Dozen Years of Mainstreaming Literature: A Content Analysis", *Exceptionality*, Vol. 6 No. 2, pp. 99-109.
- Muralidharan, S., Rasmussen, L., Patterson, D. and Shin, J.-H. (2011), "Hope for Haiti: An analysis of Facebook and Twitter usage during the earthquake relief efforts", *Public Relations Review*, Vol. 37 No. 2, pp. 175-177.
- Naaman, M., Boase, J., Lai, C.-H. and Acm. (2010), "Is it Really About Me? Message Content in Social Awareness Streams", in *2010 ACM Conference on Computer Supported Cooperative Work*, pp. 189-192.
- Naveed, N., Gottron, T., Kunegis, J. and Alhadi, A. C. (2011), "Bad News Travel Fast: A Content-based Analysis of Interestingness on Twitter", *Proceedings of the ACM WebSci'11*, available at: [http://www.websci11.org/fileadmin/websci/Papers/50\\_paper.pdf](http://www.websci11.org/fileadmin/websci/Papers/50_paper.pdf) (accessed 12 July 2012).
- Passant, A., Hastrup, T. and Boj, U. (2008), "Microblogging : A Semantic and Distributed Approach", *Proceedings of the 4th Workshop on Scripting for the Semantic Web*, available at: <http://hdl.handle.net/10379/539> (accessed 12 July 2012).
- Petrovi, S., Osborne, M. and Lavrenko, V. (2010), "The Edinburgh Twitter corpus", *Proceedings of the NAACL HLT 2010 Workshop on Computational*

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

*Linguistics in a World of Social Media*, available at:

<http://www.aclweb.org/anthology/W/W10/W10-05.pdf> - page=37

(accessed 12 July 2012).

- Robinson, L. (2009), "Information science: communication chain and domain analysis", *Journal of Documentation*, Vol. 65 No. 4, pp. 578-591.
- Ross, C., Terras, M., Warwick, C. and Welsh, A. (2011), "Enabled backchannel: conference Twitter use by digital humanists", *Journal of Documentation*, Vol. 67 No. 2, pp. 214-237.
- Russell, M. A. (2011a) *21 recipes for mining Twitter*, O'Reilly, Sebastopol, Calif.
- Russell, M. A. (2011b) *Mining the social web*, O'Reilly, Sebastopol, Calif.
- Sadikov, E., Medina, M., Leskovec, J. and Garcia-Molina, H. (2011), "Correcting for missing data in information cascades", in *Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM* pp. 55-64.
- Sakak, T., Okazaki, M. and Matsuo, Y. (2010), "Earthquake shakes twitter users: real-time event detection by social sensors", in *9th international conference on World wide web*, International World Wide Web Conference Committee (IW3C2), pp. 851-860.
- Stemler, S. (2001), "An Overview of Content Analysis", *Practical Assessment, Research & Evaluation*, Vol. 7 No. 17, available at:  
<http://PAREonline.net/getvn.asp?v=7&n=17> (accessed 12 July 2012).
- Szostak, R. (2008), "Classification, interdisciplinarity, and the study of science", *Journal of Documentation*, Vol. 64 No. 3, pp. 319-332.
- Szostak, R. (2011), "Complex concepts into basic concepts", *Journal of the American Society for Information Science and Technology*, Vol. 62 No. 11, pp. 2247-2265.
- Talja, S. and Maula, H. (2003), "Reasons for the use and non-use of electronic journals and databases: A domain analytic study in four scholarly disciplines", *Journal of Documentation*, Vol. 59 No. 6, pp. 673-691.
- Tennis, J. T. (2003), "Two Axes of Domains for Domain Analysis", *Knowledge Organization*, Vol. 30 No. 3/4, pp. 191-195.
- Tenopir, C., King, D. W., Spencer, J. and Wu, L. (2009), "Variations in article seeking and reading patterns of academics: What makes a difference?", *Library & Information Science Research*, Vol. 31 No. 3, pp. 139-148.
- Waters, R. D. and Jamal, J. Y. (2011), "Tweet, tweet, tweet: A content analysis of nonprofit organizations' Twitter updates", *Public Relations Review*, Vol. 37 No. 3, pp. 321-324.
- Weinberger, S. (2011), "Spies to use Twitter as crystal ball", *Nature*, Vol. 478 No. 7369, pp. 301.
- Weller, M. (2011) *The Digital Scholar*, Bloomsbury Academic, London.
- Wenger, E., White, N. and Smith, J. D. (2009) *Digital Habitats*, CPsquare, Portland.
- Whitelaw, C., Agrawal, M., Rao, H. R. and Onook, O. (2011), "Using social media to study social phenomena: An example using Twitter data", in *Wireless Telecommunications Symposium (WTS), 2011*, pp. 1-3.
- Wigand, F. D. L. (2010), "Twitter takes wing in government: diffusion, roles, and management", in *Proceedings of the 11th Annual International Digital Government Research Conference on Public Administration Online: Challenges and Opportunities*, Digital Government Society of North America, pp. 66-71.

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

Wigley, S. and Lewis, B. K. (2012), "Rules of engagement: Practice what you tweet", *Public Relations Review*, Vol. 38 No. 1, pp. 165-167.

Yamasaki, S. (2011), "A trust rating method for information providers over the social web service: A pragmatic protocol for trust among information explorers and information providers", in *Proceedings - 11th IEEE/IPSJ International Symposium on Applications and the Internet, SAINT* pp. 578-582.

Zhang, J., Qu, Y., Cody, J. and Wu, Y. (2010), "A Case Study of Micro-blogging in the Enterprise: Use, Value, and Related Issues", in *CHI 2010: Organizations and Communities* pp. 123-132.

Zhao, D. and Rosson, M. B. (2009), "How and why people Twitter: the role that micro-blogging plays in informal communication at work", in *Proceedings of the ACM 2009 international conference on Supporting group work - GROUP '09*, pp. 243-252.

## Appendix A: Twitter related academic papers

---

*A dataset from 2007-2011*

### Overview

This dataset consists of a bibliography of papers relating to Twitter studied in Williams, Terras, and Warwick (to appear). The aim of the study was to locate and classify academic papers on Twitter. Papers were identified by searching two databases:

- Scopus (<http://www.info.sciverse.com/scopus>)
- Web of Science (<http://wok.mimas.ac.uk/>)

Papers were identified by using the search word "Twitter", limiting the searches to the abstracts, keywords and titles of journal and conference papers, published between 2007 (the first year there were any papers related to Twitter) and 2011 (the last full year before the study). The searches were all conducted on 12<sup>th</sup> January 2012, Web of Science returned 384 items and Scopus 1132. Data cleansing was performed to remove obvious duplicates, and items with missing data, leaving a total of 1161 items, subsequently another nine were found to be duplicates, leaving a corpus of 1152 papers.

Each paper's title and abstract was read and re-read and classified according to the paper's focus:

- Focussed. The paper is focussed on Twitter or another microblogging system.
- Mentions. The paper mentions Twitter or microblogging but it is primarily about something else.
- Not. The paper is not about microblogging, the term twitter is used in another sense, for example the noise made by birds.

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

This dataset lists these papers with 575 identified as Twitter-focussed; 550 as mentioning Twitter and 27 not related to microblogging.

## Limitations

The classification of papers is based on the opinions of the researchers formed after reading the title and abstract. A reader of the full paper may make a different classification.

The dataset was collected on 12<sup>th</sup> January 2012, since that time the journals and conferences indexed by the databases have increased and so there are papers in earlier years that would appear in the dataset they would be included if it were collected today. For example the paper by Chang (2010) was not in the original set as the Proceedings it is in was not at the time indexed. Some editions of periodicals with 2011 publications dates were not indexed until later in 2012 for example Eysenbach G (2011) is not included as the final 2011 issue of the journal was not apparently indexed at the time.

## References

- Chang, H.-C. (2010). *A new perspective on Twitter hashtag use: Diffusion of innovation theory*. Paper presented at the Proceedings of the American Society for Information Science and Technology.
- Eysenbach G. (2011). Can Tweets Predict Citations? Metrics of Social Impact Based on Twitter and Correlation with Traditional Metrics of Scientific Impact. *Journal of Medical Internet Research*, 13(4), e123.
- Williams, S., Terras, M., & Warwick, C. (to appear). What people study when they study Twitter: Classifying Twitter related academic papers. *Journal of Documentation*.

## Complete list of Twitter Papers

The following is a list of the 575 twitter studies found during this research. A spreadsheet containing this data is available from the University of Reading institutional repository.

- 1 Abel F., Celik I., Houben G.-J., Siehndel P. Leveraging the semantics of tweets for adaptive faceted search on twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 7031 LNCS PART 1 17
- 2 Abel F., Gao Q., Houben G.-J., Tao K. Analyzing user modeling on Twitter for personalized news recommendations 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6787 LNCS 1 12

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 3 Abel F., Gao Q., Houben G.-J., Tao K. Semantic enrichment of twitter posts for user profile construction on the social web 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6643 LNCS PART 2 375 389
- 4 Acar A., Muraki Y. Twitter for crisis communication: Lessons learned from Japan's tsunami disaster 2011 International Journal of Web Based Communities 7 3 392 402
- 5 Achrekar H., Gandhe A., Lazarus R., Yu S.-H., Liu B. Predicting flu trends using twitter data 2011 2011 IEEE Conference on Computer Communications Workshops, INFOCOM WKSHPs 2011 5928903 702 707
- 6 Agarwal S., Agarwal S. Social networks as internet barometers for optimizing content delivery networks 2009 2009 IEEE 3rd International Symposium on Advanced Networks and Telecommunication Systems, ANTS 2009 5409895
- 7 Aharony N. Twitter use in libraries: An exploratory analysis 2010 Journal of Web Librarianship 4 4 333 350
- 8 Al-Eidan R.M.B., Al-Khalifa R.S., Al-Salman A.S. Measuring the credibility of Arabic text content in twitter 2010 2010 5th International Conference on Digital Information Management, ICDIM 2010 5664223 285 291
- 9 Ampofo L., Anstead N., O'Loughlin B. Trust, confidence, and credibility: Citizen responses on Twitter to opinion polls during the 2010 UK general election 2011 Information Communication and Society 14 6 850 871
- 10 Anger I., Kittl C. Measuring influence on Twitter 2011 ACM International Conference Proceeding Series 31
- 11 Aosaki Y., Sugihara T., Umemoto K. Examining the trend toward a service economy in information media through changes to technology: Influence of twitter on media companies 2010 PICMET '10 - Portland International Center for Management of Engineering and Technology, Proceedings - Technology Management for Global Economic Growth 5603354 2910 2914
- 12 Aragon P., Garcia I., Garcia A. Graph visualization tool for Twittersphere users based on a high-scalable extract, transform and load system 2011 ACM International Conference Proceeding Series
- 13 Arakawa Y., Tagashira S., Fukuda A. Relationship analysis between user's contexts and real input words through Twitter 2010 2010 IEEE Globecom Workshops, GC'10 5700241 1751 1755
- 14 Aramaki E., Maskawa S., Morita M. Twitter catches the flu: Detecting influenza epidemics using Twitter 2011 EMNLP 2011 - Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference 1568 1576
- 15 Arceneaux N., Weiss A.S. Seems stupid until you try it: Press coverage of twitter, 2006-9 2010 New Media and Society 12 8 1262 1279



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 16 Archambault D., Greene D., Cunningham P., Hurley N. ThemeCrowds: Multiresolution summaries of twitter usage 2011 International Conference on Information and Knowledge Management, Proceedings 77 84
- 17 Ariyasu K., Fujisawa H., Kanatsugu Y. Message analysis algorithms and their application to social TV 2011 EuroITV'11 - Proceedings of the 9th European Interactive TV Conference 1 9
- 18 Armstrong C.L., Gao F. Gender, Twitter and news content an examination across platforms and coverage areas 2011 Journalism Studies 12 4 490 505
- 19 Asur S., Huberman B.A. Predicting the future with social media 2010 HP Laboratories Technical Report 53
- 20 Baatarjav E.-A., Amin A., Dantu R., Gupta N.K. Are you my friend? 2010 2010 7th IEEE Consumer Communications and Networking Conference, CCNC 2010 5421732
- 21 Badawy A.M. Technology management simply defined: A tweet plus two characters 2009 Journal of Engineering and Technology Management - JET-M 26 4 219 224
- 22 Bae Y., Lee H. A sentiment analysis of audiences on twitter: Who is the positive or negative audience of popular twitterers? 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6935 LNCS 732 739
- 23 Bakshy E., Mason W.A., Hofman J.M., Watts D.J. Everyone's an influencer: Quantifying influence on twitter 2011 Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM 2011 65 74
- 24 Ballsun-Stanton B., Carruthers K. #c3t the command & control of Twitter: On a socially constructed Twitter & applications of the Philosophy of Data 2010 Proceeding - 5th International Conference on Computer Sciences and Convergence Information Technology, ICCIT 2010 5711049 161 165
- 25 Banerjee N., Chakraborty D., Dasgupta K., Joshi A., Mittal S., Nagar S., Rai A., Madan S. User interests in social media sites: An exploration with micro-blogs 2009 International Conference on Information and Knowledge Management, Proceedings 1823 1826
- 26 Barbosa L., Feng J. Robust sentiment detection on twitter from biased and noisy data 2010 Coling 2010 - 23rd International Conference on Computational Linguistics, Proceedings of the Conference 2 36 44
- 27 Barnes S.J., Bohringer M. Modeling use continuance behavior in microblogging services: The case of Twitter 2011 Journal of Computer Information Systems 51 4 1 10
- 28 Beck K. Analyzing tweets to identify malicious messages 2011 IEEE International Conference on Electro Information Technology 5978594
- 29 Bernstein M.S., Suh B., Hong L., Chen J., Kairam S., Chi E.H. Eddi: Interactive topic-based browsing of social status streams 2010 UIST 2010



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference 562 570
- 44 Brown P.E., Feng J. Measuring user influence on twitter using modified K-shell decomposition 2011 AAAI Workshop - Technical Report WS-11-02 18 23
- 45 Bulut M.F., Yilmaz Y.S., Demirbas M. Crowdsourcing location-based queries 2011 2011 IEEE International Conference on Pervasive Computing and Communications Workshops, PERCOM Workshops 2011 5766944 513 518
- 46 Burger J.D., Henderson J., Kim G., Zarrella G. Discriminating gender on Twitter 2011 EMNLP 2011 - Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference 1301 1309
- 47 Burghouwt P., Spruit M., Sips H. Towards detection of botnet communication through social media by monitoring user activity 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 7093 LNCS 131 143
- 48 Burton S., Soboleva A. Interactive or reactive? Marketing with Twitter 2011 Journal of Consumer Marketing 28 7 491 499
- 49 Buzeck M., Muller J. TwitterSigns: Microblogging on the walls 2010 MM'10 - Proceedings of the ACM Multimedia 2010 International Conference 819 822
- 50 Buzzi M.C., Buzzi M., Leporini B. Web 2.0: Twitter and the blind 2011 ACM International Conference Proceeding Series 151 156
- 51 Castellanos M., Dayal U., Hsu M., Ghosh R., Dekhil M., Lu Y., Zhang L., Schreiman M. LCI: A social channel analysis platform for live customer intelligence 2011 Proceedings of the ACM SIGMOD International Conference on Management of Data 1049 1057
- 52 Castellanos M., Ghosh R., Lu Y., Zhang L., Ruiz P., Dekhil M., Dayal U., Hsu M. LivePulse: Tapping social media for sentiments in real-time 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 193 196
- 53 Cataldi M., Di Caro L., Schifanella C. Emerging topic detection on Twitter based on temporal and social terms evaluation 2010 Proceedings of the 10th International Workshop on Multimedia Data Mining, MDMKDD '10 4
- 54 Caverlee J., Cheng Z., Eoff B., Hsu C.-F., Kamath K., Kashoob S., Kelley J., Khabiri E., Lee K. SocialTrust++: Building community-based trust in social information systems 2010 Proceedings of the 6th International Conference on Collaborative Computing: Networking, Applications and Worksharing, CollaborateCom 2010 5767026
- 55 Celik I., Abel F., Houben G.-J. Learning semantic relationships between entities in Twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6757 LNCS 167 181

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 56 Celikyilmaz A., Hakkani-Tur D., Feng J. Probabilistic model-based sentiment analysis of twitter messages 2010 2010 IEEE Workshop on Spoken Language Technology, SLT 2010 - Proceedings 5700826  
79 84
- 57 Chao T.C. Data repositories: A home for microblog archives? 2011 ACM International Conference Proceeding Series  
655 656
- 58 Chaudhry A. Social media and compliant pharmaceutical industry promotion: The ASCO 2010 Twitter experience 2011 Journal of Medical Marketing 11 1 38 48
- 59 Chen C., Li F., Ooi B.C., Wu S. TI: An efficient indexing mechanism for real-time search on tweets 2011 Proceedings of the ACM SIGMOD International Conference on Management of Data  
649 660
- 60 Chen H., Zhou X., Man H., Wu Y., Ahmed A.U., Jin Q. A framework of organic streams: Integrating dynamically diversified contents into ubiquitous personal study 2010 Proceedings - Symposia and Workshops on Ubiquitous, Autonomic and Trusted Computing in Conjunction with the UIC 2010 and ATC 2010 Conferences, UIC-ATC 2010 5667166  
386 391
- 61 Chen J., Arumathurai M., Jiao L., Fu X., Ramakrishnan K.K. COPSS: An efficient content oriented publish/subscribe system 2011 Proceedings - 2011 7th ACM/IEEE Symposium on Architectures for Networking and Communications Systems, ANCS 2011 6062723 99  
110
- 62 Chen J., Nairn R., Chi E.H. Speak little and well: Recommending conversations in online social streams 2011 Conference on Human Factors in Computing Systems - Proceedings 217 226
- 63 Chen J., Nairn R., Nelson L., Bernstein M., Chi E. Short and tweet: Experiments on recommending content from information streams 2010 Conference on Human Factors in Computing Systems - Proceedings 2  
1185 1194
- 64 Chen Q., Shipper T., Khan L. Tweets mining using Wikipedia and impurity cluster measurement 2010 ISI 2010 - 2010 IEEE International Conference on Intelligence and Security Informatics: Public Safety and Security 5484758 141 143
- 65 Chen, Gina Masullo Tweet this: A uses and gratifications perspective on how active Twitter use gratifies a need to connect with others 2011 COMPUTERS IN HUMAN BEHAVIOR 27 2 755  
762
- 66 Cheng J., Sun A., Hu D., Zeng D. An information diffusion-based recommendation framework for micro-blogging 2011 Journal of the Association of Information Systems 12 7 463 486
- 67 Cheng Z., Caverlee J., Lee K. You are where you tweet: A content-based approach to geo-locating Twitter users 2010 International Conference on Information and Knowledge Management, Proceedings  
759 768
- 68 Cheong M., Lee V. Integrating web-based intelligence retrieval and decision-making from the twitter trends knowledge base 2009

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- International Conference on Information and Knowledge Management, Proceedings 1 8
- 69 Cheong M., Lee V. A study on detecting patterns in Twitter intra-topic user and message clustering 2010 Proceedings - International Conference on Pattern Recognition 5597282 3125 3128
- 70 Cheong M., Lee V. Twittering for earth: A study on the impact of microblogging activism on earth hour 2009 in Australia 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 5991 LNAI PART 2 114 123
- 71 Cheong M., Lee V.C.S. A microblogging-based approach to terrorism informatics: Exploration and chronicling civilian sentiment and response to terrorism events via Twitter 2011 Information Systems Frontiers 13 1 45 59
- 72 Chew C., Eysenbach G. Pandemics in the age of Twitter: Content analysis of tweets during the 2009 H1N1 outbreak 2010 PLoS ONE 5 11 e14118
- 73 Chhabra S., Aggarwal A., Benevenuto F., Kumaraguru P. Phi.sh/\$oCial: The phishing landscape through short URLs 2011 ACM International Conference Proceeding Series 92 101
- 74 Chi F., Yang N. Twitter adoption in congress 2011 Review of Network Economics 10 1 3
- 75 Chiang C.-W., Tomimatsu K. The effort of social networking on social behavior - Integrating Twitter, mobile devices, and wearable clothing as an example 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6763 LNCS PART 3 30 37
- 76 Chinrungrueng J., Dumnin S., Pongthornseri R. IParking: A parking management framework 2011 2011 11th International Conference on ITS Telecommunications, ITST 2011 6060133 63 68
- 77 Choi D., Kim T., Min M., Lee J.-H. An approach to use query-related web context on document ranking 2011 Proceedings of the 5th International Conference on Ubiquitous Information Management and Communication, ICUIMC 2011 4
- 78 Chu Z., Gianvecchio S., Wang H., Jajodia S. Who is tweeting on twitter: Human, bot, or cyborg? 2010 Proceedings - Annual Computer Security Applications Conference, ACSAC 21 30
- 79 Chung J., Mustafaraj E. Can collective sentiment expressed on twitter predict political elections? 2011 Proceedings of the National Conference on Artificial Intelligence 2 1770 1771
- 80 Clark E., Araki K. Text normalization in social media: Progress, problems and applications for a pre-processing system of casual English 2011 Procedia - Social and Behavioral Sciences 27 2 11
- 81 Claster W.B., Caughron M., Sallis P.J. Harvesting consumer opinion and wine knowledge off the social media grape vine utilizing artificial neural networks 2010 Proceedings - UKSim 4th European Modelling Symposium on Computer Modelling and Simulation, EMS2010 5703684 206 211

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 82 Claster W.B., Cooper M., Sallis P. Thailand - Tourism and conflict. Modeling sentiment from twitter tweets using naïve bayes and unsupervised artificial neural nets 2010 Proceedings - 2nd International Conference on Computational Intelligence, Modelling and Simulation, CIMSIm 2010 5701826 89 94
- 83 Claster W.B., Dinh H., Cooper M. Naive bayes and unsupervised artificial neural nets for caneun tourism social media data analysis 2010 Proceedings - 2010 2nd World Congress on Nature and Biologically Inspired Computing, NaBIC 2010 5716370 158 163
- 84 Claster W.B., Hung D.Q., Shanmuganathan S. Unsupervised artificial neural nets for modeling movie sentiment 2010 Proceedings - 2nd International Conference on Computational Intelligence, Communication Systems and Networks, CICSyN 2010 5616452 349 354
- 85 Correa D., Sureka A. Mining tweets for tag recommendation on social media 2011 International Conference on Information and Knowledge Management, Proceedings 69 75
- 86 Cosoi, Alexandru Catalin; Cosoi, Carmen Maria; Sgarciu, Valentin; Dumitru, Bogdan; Vlad, Madalin Stefan SPAM/TWITTER 2009 ANNALS OF DAAAM FOR 2009 & PROCEEDINGS OF THE 20TH INTERNATIONAL DAAAM SYMPOSIUM 20 105 106
- 87 Cramer H., Buttner S. Things that tweet, check-in and are befriended. Two explorations on robotics & social media 2011 HRI 2011 - Proceedings of the 6th ACM/IEEE International Conference on Human-Robot Interaction 125 126
- 88 Crawford, Kate Following you: Disciplines of listening in social media 2009 CONTINUUM-JOURNAL OF MEDIA & CULTURAL STUDIES 23 4 525 535
- 89 Cuddy C., Graham J., Morton-Owens E.G. Implementing twitter in a health sciences library 2010 Medical Reference Services Quarterly 29 4 320 330
- 90 Cui A., Zhang M., Liu Y., Ma S. Are the URLs really popular in microblog messages? 2011 CCIS2011 - Proceedings: 2011 IEEE International Conference on Cloud Computing and Intelligence Systems 6045021 1 5
- 91 Cui A., Zhang M., Liu Y., Ma S. Emotion tokens: Bridging the gap among multilingual twitter sentiment analysis 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 7097 LNCS 238 249
- 92 Culotta A. Towards detecting influenza epidemics by analyzing Twitter messages 2010 SOMA 2010 - Proceedings of the 1st Workshop on Social Media Analytics 115 122
- 93 Cunningham J. Time to Tweet 2010 ITNOW 52 1 12 13
- 94 Curran K., O'Hara K., O'Brien S. The role of twitter in the world of business 2011 International Journal of Business Data Communications and Networking 7 3 1 15
- 95 Cuvelier E., Aufaure M.-A. A buzz and E-reputation monitoring tool for twitter based on galois lattices 2011 Lecture Notes in Computer Science

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6828 LNAI 91 103
- 96 Dan O., Feng J., Davison B. Filtering microblogging messages for social tv 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 197 200
- 97 Dann S. Twitter content classification 2010 First Monday 15 12
- 98 Das Sarma A., Das Sarma A., Gollapudi S., Panigrahy R. Ranking mechanisms in twitter-like forums 2010 WSDM 2010 - Proceedings of the 3rd ACM International Conference on Web Search and Data Mining 21 30
- 99 Davidov D., Tsur O., Rappoport A. Enhanced sentiment learning using twitter hashtags and smileys 2010 Coling 2010 - 23rd International Conference on Computational Linguistics, Proceedings of the Conference 2 241 249
- 100 Davis Jr. C.A., Pappa G.L., de Oliveira D.R.R., de L. Arcanjo F. Inferring the location of twitter messages based on user relationships 2011 Transactions in GIS 15 6 735 751
- 101 De Choudhury M., Counts S., Czerwinski M. Identifying relevant social media content: Leveraging information diversity and user cognition 2011 HT 2011 - Proceedings of the 22nd ACM Conference on Hypertext and Hypermedia 161 170
- 102 De Longueville B., Smith R.S., Luraschi G. "OMG, from here, I can see the flames!": A use case of mining location based social networks to acquire spatio-temporal data on forest fires 2009 GIS: Proceedings of the ACM International Symposium on Advances in Geographic Information Systems 73 80
- 103 De Moor A. Conversations in context: A Twitter case for social media systems design 2010 ACM International Conference Proceeding Series
- 104 DeFebbo D.M., Mihrad L., Strong M.A. Microblogging for medical libraries and librarians 2009 Journal of Electronic Resources in Medical Libraries 6 3 211 223
- 105 Del Campo-Avila J., Moreno-Vergara N., Trella-Lopez M. Analyzing factors to increase the influence of a Twitter user 2011 Advances in Intelligent and Soft Computing 89 69 76
- 106 Demirbas M., Bayir M.A., Akcora C.G., Yilmaz Y.S., Ferhatosmanoglu H. Crowd-sourced sensing and collaboration using twitter 2010 2010 IEEE International Symposium on "A World of Wireless, Mobile and Multimedia Networks", WoWMoM 2010 - Digital Proceedings 5534910
- 107 Dent K., Paul S. Through the Twitter glass: Detecting questions in micro-text 2011 AAAI Workshop - Technical Report WS-11-05 8 13
- 108 Diakopoulos N.A., Shamma D.A. Characterizing debate performance via aggregated twitter sentiment 2010 Conference on Human Factors in Computing Systems - Proceedings 2 1195 1198

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 109 Dodds P.S., Harris K.D., Kloumann I.M., Bliss C.A., Danforth C.M. Temporal patterns of happiness and information in a global social network: Hedonometrics and Twitter 2011 *PLoS ONE* 6 12 e26752
- 110 Dong A., Zhang R., Kolari P., Bai J., Diaz F., Chang Y., Zheng Z., Zha H. Time is of the essence: Improving recency ranking using Twitter data 2010 *Proceedings of the 19th International Conference on World Wide Web, WWW '10* 331 340
- 111 Dork M., Gruen D., Williamson C., Carpendale S. A Visual backchannel for large-scale events 2010 *IEEE Transactions on Visualization and Computer Graphics* 16 6 5613451 1129 1138
- 112 Doughty M., Rowland D., Lawson S. Co-viewing live TV with digital backchannel streams 2011 *EuroITV'11 - Proceedings of the 9th European Interactive TV Conference* 141 144
- 113 Duan Y., Jiang L., Qin T., Zhou M., Shum H.-Y. An empirical study on learning to rank of tweets 2010 *Coling 2010 - 23rd International Conference on Computational Linguistics, Proceedings of the Conference* 2 295 303
- 114 Ebner M., Lienhardt C., Rohs M., Meyer I. Microblogs in Higher Education - A chance to facilitate informal and process-oriented learning? 2010 *Computers and Education* 55 1 92 100
- 115 Ediger D., Jiang K., Riedy J., Bader D.A., Corley C., Farber R., Reynolds W.N. Massive social network analysis: Mining twitter for social good 2010 *Proceedings of the International Conference on Parallel Processing* 5599247 583 593
- 116 Efron M. Hashtag retrieval in a microblogging environment 2010 *SIGIR 2010 Proceedings - 33rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* 787 788
- 117 Efron M. Information search and retrieval in microblogs 2011 *Journal of the American Society for Information Science and Technology* 62 6 996 1008
- 118 Elavsky C.M., Mislán C., Elavsky S. When talking less is more: Exploring outcomes of Twitter usage in the large-lecture hall 2011 *Learning, Media and Technology* 36 3 215 233
- 119 Endarnoto S.K., Pradipta S., Nugroho A.S., Purnama J. Traffic condition information extraction & visualization from social media twitter for android mobile application 2011 *Proceedings of the 2011 International Conference on Electrical Engineering and Informatics, ICEEI 2011* 6021743
- 120 Epstein, Gady A Twitter To Invest In 2011 *FORBES* 187 4 36 36
- 121 Eriksen M. Scaling Scala at Twitter 2010 *ACM SIGPLAN Commercial Users of Functional Programming, CUFPP'10* 1900170
- 122 Escalante H.J., Montes-Y-Gomez M., Solorio T. A weighted profile intersection measure for profile-based authorship attribution 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 7094 LNAI PART 1 232 243



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 123 Esparza S.G., O'Mahony M.P., Smyth B. On the real-time web as a source of recommendation knowledge 2010 *RecSys'10 - Proceedings of the 4th ACM Conference on Recommender Systems* 305  
308
- 124 Ferguson D.A., Greer C.F. Local Radio and Microblogging: How Radio Stations in the U.S. are Using Twitter 2011 *Journal of Radio and Audio Media* 18 1 33 46
- 125 Ferrari L., Rosi A., Mamei M., Zambonelli F. Extracting urban patterns from location-based social networks 2011 *3rd ACM SIGSPATIAL International Workshop on Location-Based Social Networks, LBSN 2011 - Held in Conjunction with the 19th ACM SIGSPATIAL GIS 2011*
- 126 Ferreira S.A., Castro C., Andrade A. Morphology of cognitive communication 2.0 in higher Education classroom 2011 *Proceedings of the 6th Iberian Conference on Information Systems and Technologies, CISTI 2011* 5974175
- 127 Fesehaye K. D., Nahrstedt K., Wang G. Analytical models of short-message reliability in mobile wireless networks 2011 *MSWiM'11 - Proceedings of the 14th ACM International Conference on Modeling, Analysis, and Simulation of Wireless and Mobile Systems* 369  
376
- 128 Field K., O'Brien J. Cartoblography: Experiments in using and organising the spatial context of micro-blogging 2010 *Transactions in GIS SUPPL. 1* 5 23 14
- 129 Fields E. A unique Twitter use for reference services 2010 *Library Hi Tech News* 27 6 14 15
- 130 Fischer E., Reuber A.R. Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? 2011 *Journal of Business Venturing* 26 1 1 18
- 131 Forrestal V. Making twitter work: A guide for the uninitiated, the skeptical, and the pragmatic 2011 *Reference Librarian* 52 1 146 151
- 132 Foster J., Cetinoglu O., Wagner J., Le Roux J., Hogan S., Nivre J., Hogan D., Van Genabith J. #hardtoparse: POS tagging and parsing the Twittiverse 2011 *AAAI Workshop - Technical Report WS-11-05* 20  
25
- 133 Fox B.I., Varadarajan R. Use of twitter to encourage interaction in a multi-campus pharmacy management course 2011 *American Journal of Pharmaceutical Education* 75 5
- 134 Franko, Orrin I. Twitter as a Communication Tool for Orthopedic Surgery 2011 *ORTHOPEDECS* 34 11 873 876
- 135 Fujiki S., Yano H., Fukuda T., Yamana H. Retweet reputation: A bias-free evaluation method for tweeted contents 2011 *AAAI Workshop - Technical Report WS-11-01* 10 13
- 136 Fujisaka T., Lee R., Sumiya K. Detection of unusually crowded places through micro-blogging sites 2010 *24th IEEE International Conference on Advanced Information Networking and Applications Workshops, WAINA 2010* 5480769 467 472

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 137 Fujisaka T., Lee R., Sumiya K. Exploring urban characteristics using movement history of mass mobile microbloggers 2010 HotMobile 2010: The 11th Workshop on Mobile Computing Systems and Applications  
13 18
- 138 Galassini C., Malizia A., Bellucci A. An approach for developing intelligent systems for sentiment analysis over social networks 2011 Proceedings of the IASTED International Conference on Intelligent Systems and Control  
1 7
- 139 Gao Q., Abel F., Houben G.-J., Tao K. Interweaving trend and user modeling for personalized news recommendation 2011 Proceedings - 2011 IEEE/WIC/ACM International Conference on Web Intelligence, WI 2011 1  
6040504 100 103
- 140 Gayo-Avello D. Don't turn social media into another 'literary digest' poll 2011 Communications of the ACM 54 10 121  
128
- 141 Geho P.R., Smith S., Lewis S.D. Is twitter a viable commercial use platform for small businesses? an empirical study targeting two audiences in the small business community 2010 Entrepreneurial Executive 15  
73 85
- 142 Gelernter J., Mushegian N. Geo-parsing messages from microtext 2011 Transactions in GIS 15 6 753 773
- 143 Genc Y., Sakamoto Y., Nickerson J.V. Discovering context: Classifying tweets through a semantic transform based on wikipedia 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)6780 LNAI  
484 492
- 144 Ghosh S., Korlam G., Ganguly N. Spammers' networks within online social networks: A case-study on Twitter 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011  
41 42
- 145 Ghosh S., Srivastava A., Ganguly N. Assessing the effects of a soft cut-off in the twitter social network 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6641 LNCS PART 2 288 300
- 146 Goh D.H.-L., Lee C.S. An analysis of tweets in response to the death of Michael Jackson 2011 Aslib Proceedings: New Information Perspectives  
63 5 432 444
- 147 Golbeck J., Grimes J.M., Rogers A. Twitter use by the U.S. Congress 2010 Journal of the American Society for Information Science and Technology 61 8 1612 1621
- 148 Golbeck J., Hansen D.L. Computing political preference among Twitter followers 2011 Conference on Human Factors in Computing Systems - Proceedings 1105 1108
- 149 Golder S.A., Macy M.W. Diurnal and seasonal mood vary with work, sleep, and daylength across diverse cultures 2011 Science 333  
6051 1878 1881
- 150 Golder S.A., Yardi S. Structural predictors of tie formation in twitter: Transitivity and mutuality 2010 Proceedings - SocialCom 2010: 2nd IEEE International Conference on Social Computing, PASSAT 2010: 2nd IEEE

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

International Conference on Privacy, Security, Risk and Trust

- 5590841 88 95
- 151 Goncalves B., Perra N., Vespignani A. Modeling users' activity on twitter networks: Validation of Dunbar's number 2011 *PLoS ONE* 6 8 e22656
- 152 Grace J.H., Zhao D., Boyd D. Microblogging: What and how can we learn from it? 2010 *Conference on Human Factors in Computing Systems - Proceedings* 4517 4520
- 153 Gragg, Phillip; Sellers, Christine L. Twitter 2010 *LAW LIBRARY JOURNAL* 102 2 325 330
- 154 Graham K.C. Complexity science and social media: Network modeling in following "Tweets" 2010 *2010 IEEE Systems and Information Engineering Design Symposium, SIEDS10* 5469662 141 146
- 155 Grant W.J., Moon B., Grant J.B. Digital dialogue? australian politicians' use of the social network tool twitter 2010 *Australian Journal of Political Science* 45 4 579 604
- 156 Greer C.F., Ferguson D.A. Using twitter for promotion and branding: A content analysis of local television twitter sites 2011 *Journal of Broadcasting and Electronic Media* 55 2 198 214
- 157 Grier C., Thomas K., Paxson V., Zhang M. @Spam: The underground on 140 characters or less 2010 *Proceedings of the ACM Conference on Computer and Communications Security* 27 37
- 158 Grinev M., Grineva M., Boldakov A., Novak L., Syssoev A., Lizorkin D. Sifting micro-blogging stream for events of user interest 2009 *Proceedings - 32nd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, SIGIR 2009* 838
- 159 Grosseck G., Holotescu C. Microblogging multimedia-based teaching methods best practices with Cirip.eu 2010 *Procedia - Social and Behavioral Sciences* 2 2 2151 2155
- 160 Gruzd A., Doiron S., Mai P. Is happiness contagious online? A case of twitter and the 2010 Winter Olympics 2011 *Proceedings of the Annual Hawaii International Conference on System Sciences* 5718715
- 161 Gruzd A., Wellman B., Takhteyev Y. Imagining twitter as an imagined community 2011 *American Behavioral Scientist* 55 10 1294 1318
- 162 Gu H., Xie X., Lv Q., Ruan Y., Shang L. ETree: Effective and efficient event modeling for real-time online social media networks 2011 *Proceedings - 2011 IEEE/WIC/ACM International Conference on Web Intelligence, WI 2011* 1 6036774 300 307
- 163 Guerra P.H.C., Veloso A., Meira W., Almeida V. From bias to opinion: A transfer-learning approach to real-time sentiment analysis 2011 *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* 150 158
- 164 Guizzo E. Send a tweet to your office door 2011 *IEEE Spectrum* 48 6 5779781 22 23
- 165 Guy M., Earle P., Ostrum C., Gruchalla K., Horvath S. Integration and dissemination of citizen reported and seismically derived earthquake

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- information via social network technologies 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6065 LNCS 42 53
- 166 Haghani P., Michel S., Aberer K. The gist of everything new: Personalized top-k processing over web 2.0 streams 2010 International Conference on Information and Knowledge Management, Proceedings 489 498
- 167 Hamed A.A., Lee B.S., Thessen A.E. Ecosystems monitoring: An information extraction and event processing scientific workflow 2010 Proceedings - 2010 6th World Congress on Services, Services-1 2010 5575852 302 305
- 168 Han D., Kinoshita Y., Fukuchi R., Kousaki T. Utterance generation using Twitter replying sentences and character assignment 2011 International Journal of Digital Content Technology and its Applications 5 10 119 126
- 169 Hannon J., Bennett M., Smyth B. Recommending Twitter users to follow using content and collaborative filtering approaches 2010 RecSys'10 - Proceedings of the 4th ACM Conference on Recommender Systems 199 206
- 170 Hannon J., McCarthy K., Lynch J., Smyth B. Personalized and automatic social summarization of events in video 2011 International Conference on Intelligent User Interfaces, Proceedings IUI 338 338
- 171 Hansen L.K., Arvidsson A., Nielsen F.A., Colleoni E., Etter M. Good friends, bad news - Affect and virality in twitter 2011 Communications in Computer and Information Science 185 CCIS PART 2 34 43
- 172 Hargittai E., Litt E. The tweet smell of celebrity success: Explaining variation in Twitter adoption among a diverse group of young adults 2011 New Media and Society 13 5 824 842
- 173 Hauff C., Houben G.-J. Deriving knowledge profiles from twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6964 LNCS 139 152
- 174 He S., Guo Y., Ghanem M. Incremental learning of relations from the most frequent patterns in conversations on microblogging services 2010 Proc. of the IADIS Int. Conf. Intelligent Systems and Agents 2010, Proc. of the IADIS European Conference on Data Mining 2010, Part of the MCCSIS 2010 35 42
- 175 Heavilin N., Gerbert B., Page J.E., Gibbs J.L. Public health surveillance of dental pain via Twitter 2011 Journal of Dental Research 90 9 1047 1051
- 176 Hecht B., Hong L., Suh B., Chi E.H. Tweets from justin beiber's heart: The dynamics of the "location" field in user profiles 2011 Conference on Human Factors in Computing Systems - Proceedings 237 246
- 177 Hepp M. HyperTwitter: Collaborative knowledge engineering via Twitter messages 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6317 LNAI 451 461

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 178 Herdagdelen A., Baroni M. Stereotypical gender actions can be extracted from web text 2011 Journal of the American Society for Information Science and Technology 62 9 1741 1749
- 179 Heverin T. Ethical concerns of twitter use for collective crisis response 2011 Proceedings of the 2011 International Conference on Collaboration Technologies and Systems, CTS 2011 5928746 625 626
- 180 Heverin T. Microblogging for distributed surveillance in response to violent crises 2011 ACM International Conference Proceeding Series 827 828
- 181 Hijikata Y., Yamanaka T., Tanaka Y., Nishida S. Development of information filtering systems for disaster prevention 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6764 LNCS PART 4 318 327
- 182 Hoang T.-A., Lim E.-P., Achananuparp P., Jiang J., Zhu F. On modeling virality of twitter content 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 7008 LNCS 212 221
- 183 Holotescu C., Grosseck G. Using microblogging to deliver online courses. Case-study: Cirip.ro 2009 Procedia - Social and Behavioral Sciences 1 1 495 501
- 184 Honeycutt C., Herring S.C. Beyond microblogging: Conversation and collaboration via twitter 2009 Proceedings of the 42nd Annual Hawaii International Conference on System Sciences, HICSS 4755499
- 185 Hong L., Dan O., Davison B.D. Predicting popular messages in Twitter 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 57 58
- 186 Hong L., Davison B.D. Empirical study of topic modeling in Twitter 2010 SOMA 2010 - Proceedings of the 1st Workshop on Social Media Analytics 80 88
- 187 Hong L., Dom B., Gurumurthy S., Tsioutsoulouliklis K. A time-dependent topic model for multiple text streams 2011 Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 832 840
- 188 Hong S., Nadler D. Does the early bird move the polls? The use of the social media tool 'Twitter' by U.S. politicians and its impact on public opinion 2011 ACM International Conference Proceeding Series 182 186
- 189 Hopcroft J., Lou T., Tang J. Who will follow you back? Reciprocal relationship prediction 2011 International Conference on Information and Knowledge Management, Proceedings 1137 1146
- 190 Hu D.H., Wang C.-L., Wang Y. GPS calibrated ad-hoc localization for geosocial networking 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6406 LNCS 52 66

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 191 Hu X., Tang L., Liu H. Enhancing accessibility of microblogging messages using semantic knowledge 2011 International Conference on Information and Knowledge Management, Proceedings 2465 2468
- 192 Huang J., Thornton K.M., Efthimiadis E.N. Conversational tagging in Twitter 2010 HT'10 - Proceedings of the 21st ACM Conference on Hypertext and Hypermedia 173 177
- 193 Huberman B.A., Romero D.M., Wu F. Social networks that matter Twitter under the microscope 2009 First Monday 14 1
- 194 Huston C., Weiss M. Gathering in digital spaces: Exploring topical communities on twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6984 LNCS 320 323
- 195 Huston C., Weiss M., Benyoucef M. Following the conversation: A more meaningful expression of engagement 2011 Lecture Notes in Business Information Processing 78 LNBIP 199 210
- 196 Hutchins B. The acceleration of media sport culture: Twitter, telepresence and online messaging 2011 Information Communication and Society 14 2 237 257
- 197 Inches G., Basso A., Crestani F. On the generation of rich content metadata from social media 2011 International Conference on Information and Knowledge Management, Proceedings 85 91
- 198 Itoh M. 3D techniques for visualizing user activities on microblogs 2010 IET Conference Publications 2010 568 CP 384 389
- 199 Jackoway A., Samet H., Sankaranarayanan J. Identification of live news events using Twitter 2011 3rd ACM SIGSPATIAL International Workshop on Location-Based Social Networks, LBSN 2011 - Held in Conjunction with the 19th ACM SIGSPATIAL GIS 2011
- 200 Jackson N., Lilleker D. Microblogging, Constituency Service and Impression Management: UK MPs and the Use of Twitter 2011 Journal of Legislative Studies 17 1 86 105
- 201 Jamil N., Alhadi A.C., Noah S.A. A collaborative names recommendation in the Twitter environment based on location 2011 2011 International Conference on Semantic Technology and Information Retrieval, STAIR 2011 5995775 119 124
- 202 Jansen B.J., Chowdury A., Cook G. The ubiquitous and increasingly significant status message 2010 Interactions 17 3 15 17
- 203 Jansen B.J., Zhang M., Sobel K., Chowdury A. Twitter power: Tweets as electronic word of mouth 2009 Journal of the American Society for Information Science and Technology 60 11 2169 2188
- 204 Java A., Song X., Finin T., Tseng B. Why we twitter: Understanding microblogging usage and communities 2007 Joint Ninth WebKDD and First SNA-KDD 2007 Workshop on Web Mining and Social Network Analysis 56 65
- 205 Java A., Song X., Finin T., Tseng B. Why We twitter: An analysis of a microblogging community 2009 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 5439 LNAI 118 138

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 206 Jin O., Liu N.N., Zhao K., Yu Y., Yang Q. Transferring topical knowledge from auxiliary long texts for short text clustering 2011 International Conference on Information and Knowledge Management, Proceedings 775 784
- 207 Jo S., Hong D. The study of text extraction for forensic data 2011 Proceedings - 7th International Conference on Networked Computing and Advanced Information Management, NCM 2011 5967542 186 189
- 208 Johnson K.A. The effect of twitter posts on students' perceptions of instructor credibility 2011 Learning, Media and Technology 36 1 21 38
- 209 Joly A., Maret P., Daigremont J. Between social awariness and productivity: Result of a survey about real-time microblogging 2010 First Monday 15 11
- 210 Jones D., Potts L. Best practices for designing third party applications for contextually-aware tools 2010 SIGDOC 2010 - Proceedings of the 28th ACM International Conference on Design of Communication 95 102
- 211 Junco R., Heiberger G., Loken E. The effect of Twitter on college student engagement and grades 2011 Journal of Computer Assisted Learning 27 2 119 132
- 212 Jung J.J. Towards named entity recognition method for microtexts in online social networks: A case study of twitter 2011 Proceedings - 2011 International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2011 5992665 563 564
- 213 Junquero-Trabado V., Trench-Ribes N., Aguila-Lorente M.A., Dominguez-Sal D. Comparison of influence metrics in information diffusion networks 2011 Proceedings of the 2011 International Conference on Computational Aspects of Social Networks, CASoN'11 6085914 31 36
- 214 Kamath K.Y., Caverlee J. Identifying hotspots on the real-time web 2010 International Conference on Information and Knowledge Management, Proceedings 1837 1840
- 215 Kamath K.Y., Caverlee J. Discovering trending phrases on information streams 2011 International Conference on Information and Knowledge Management, Proceedings 2245 2248
- 216 Kamath K.Y., Caverlee J. Transient crowd discovery on the real-time social web 2011 Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM 2011 585 594
- 217 Kan T.W., Teng C.H. Life Twitter: Connecting everyday commodities with social networking service 2010 ACM SIGGRAPH ASIA 2010 Posters, SA'10 8
- 218 Kandylas V., Dasdan A. The utility of tweeted URLs for web search 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10 1127 1128
- 219 Kang H.-B., Cho S.-H., Byun I.-W. A new approach to generate a visual tweet from text message 2011 Proceedings of the 2011 International

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

Conference on Collaboration Technologies and Systems, CTS 2011

5928696 265 272

220 Kang J.H., Lerman K., Plangprasopchok A. Analyzing microblogs with affinity propagation 2010 SOMA 2010 - Proceedings of the 1st Workshop on Social Media Analytics 67 70

221 Kang U., Chau D.H., Faloutsos C. Mining large graphs: Algorithms, inference, and discoveries 2011 Proceedings - International Conference on Data Engineering 5767883 243 254

222 Kang U., Meeder B., Faloutsos C. Spectral analysis for billion-scale graphs: Discoveries and implementation 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6635 LNAI PART 2 13 25

223 Kartaltepe E.J., Morales J.A., Xu S., Sandhu R. Social network-based botnet command-and-control: Emerging threats and countermeasures 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6123 LNCS 511 528

224 Karweg B., Hutter C., Bohm K. Evolving social search based on bookmarks and status messages from social networks 2011 International Conference on Information and Knowledge Management, Proceedings 1825 1833

225 Kasiviswanathan S.P., Melville P., Banerjee A., Sindhvani V. Emerging topic detection using dictionary learning 2011 International Conference on Information and Knowledge Management, Proceedings 745 754

226 Kato D., Elkhyaoui K., Kunieda K., Yamada K., Michiardi P. A scalable interest-oriented peer-to-peer pub/sub network 2011 Peer-to-Peer Networking and Applications 4 2 165 177

227 Kawamae N. Latent interest-topic model: Finding the causal relationships behind dyadic data 2010 International Conference on Information and Knowledge Management, Proceedings 649 658

228 Kawano Y., Kishimoto Y., Yonekura T. A prototype of attention simulator on Twitter 2011 Proceedings - 2011 International Conference on Network-Based Information Systems, NBIS 2011 6041919 173 177

229 Kendall L., Hartzler A., Klasnja P.V., Pratt W. Descriptive analysis of physical activity conversations on twitter 2011 Conference on Human Factors in Computing Systems - Proceedings 1555 1560

230 Khonsari K.K., Nayeri Z.A., Fathalian A., Fathalian L. Social network analysis of Iran's green movement opposition groups using Twitter 2010 Proceedings - 2010 International Conference on Advances in Social Network Analysis and Mining, ASONAM 2010 5563067 414 415

231 Khrabrov A., Cybenko G. Discovering influence in communication networks using dynamic graph analysis 2010 Proceedings - SocialCom 2010: 2nd IEEE International Conference on Social Computing, PASSAT 2010: 2nd IEEE International Conference on Privacy, Security, Risk and Trust 5591219 288 294



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 232 Khrabrov A., Stocco G., Cybenko G. Exploratory community sensing in social networks 2010 Proceedings of SPIE - The International Society for Optical Engineering 7693 76931G
- 233 Kierkegaard S. Twitter thou doest? 2010 Computer Law and Security Review 26 6 577 594
- 234 Kieslinger B., Ebner M. A qualitative approach towards discovering microblogging practices of scientists 2011 2011 14th International Conference on Interactive Collaborative Learning, ICL 2011 - 11th International Conference Virtual University, VU'11 6059547 51 57
- 235 Kinsella S., Murdock V., O'Hare N. "I'm eating a sandwich in Glasgow": Modeling locations with tweets 2011 International Conference on Information and Knowledge Management, Proceedings 61 68
- 236 Kivran-Swaine F., Govindan P., Naaman M. The impact of network structure on breaking ties in online social networks: Unfollowing on Twitter 2011 Conference on Human Factors in Computing Systems - Proceedings 1101 1104
- 237 Kivran-Swaine F., Naaman M. Network properties and social sharing of emotions in social awareness streams 2011 Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW 379 382
- 238 Koga H., Taniguchi T. Developing a user recommendation engine on Twitter using estimated latent topics 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6761 LNCS PART 1 461 470
- 239 Komamizu T., Yamaguchi Y., Amagasa T., Kitagawa H. FACTUS: Faceted Twitter user search using Twitter lists 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6997 LNCS 343 344
- 240 Kraker P., Wagner C., Jeanquartier F., Lindstaedt S. On the way to a science intelligence: Visualizing TEL tweets for trend detection 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6964 LNCS 220 232
- 241 Krishnamurthy B., Gill P., Arlitt M. A few chirps about Twitter 2008 Proceedings of the ACM SIGCOMM 2008 Conference on Computer Communications - 1st Workshop on Online Social Networks, WOSP'08 19 24
- 242 Kundu S., Murthy C.A., Pal S.K. A new centrality measure for influence maximization in social networks 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6744 LNCS 242 247
- 243 Kwak H., Chun H., Moon S. Fragile online relationship: A first look at unfollow dynamics in Twitter 2011 Conference on Human Factors in Computing Systems - Proceedings 1091 1100
- 244 Kwak H., Lee C., Park H., Moon S. What is Twitter, a social network or a news media? 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10 591 600

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 245 Laboreiro G., Sarmiento L., Oliveira E. Identifying automatic posting systems in microblogs 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 7026 LNAI 634 648
- 246 Laboreiro G., Sarmiento L., Teixeira J., Oliveira E. Tokenizing micro-blogging messages using a text classification approach 2010 *International Conference on Information and Knowledge Management, Proceedings* 81 87
- 247 Lamos V., Cristianini N. Tracking the flu pandemic by monitoring the social web 2010 *2010 2nd International Workshop on Cognitive Information Processing, CIP2010* 5604088 411 416
- 248 Lamos V., De Bie T., Cristianini N. Flu detector-tracking epidemics on twitter2010 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6323 LNAI PART 3 599 602
- 249 Laniado D., Mika P. Making sense of Twitter 2010 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6496 LNCS PART 1 470 485
- 250 Lappas T., Punera K., Sarlos T. Mining tags using social endorsement networks 2011 *SIGIR'11 - Proceedings of the 34th International ACM SIGIR Conference on Research and Development in Information Retrieval* 195 204
- 251 Lassen, David S.; Brown, Adam R. Twitter: The Electoral Connection? 2011 *SOCIAL SCIENCE COMPUTER REVIEW* 29 4 419 436
- 252 Layton R., Watters P., Dazeley R. Authorship attribution for Twitter in 140 characters or less 2010 *Proceedings - 2nd Cybercrime and Trustworthy Computing Workshop, CTC 2010* 5615152 1 8
- 253 Le H., Wang D., Ahmadi H., Uddin Y.S., Szymanski B., Ganti R., Abdelzaher T., Fatemieh O., Wang H., Pasternack J., Han J., Roth D., Adali S., Lei H. Demo: Distilling likely truth from noisy streaming data with Apollo 2011 *SenSys 2011 - Proceedings of the 9th ACM Conference on Embedded Networked Sensor Systems* 417 418
- 254 Le H.K., Pasternack J., Ahmadi H., Gupta M., Sun Y., Abdelzaher T., Han J., Roth D., Szymanski B., Adali S. Apollo: Towards factfinding in participatory sensing 2011 *Proceedings of the 10th ACM/IEEE International Conference on Information Processing in Sensor Networks, IPSN'11* 5779079 129 130
- 255 Lee C.-H., Wu C.-H. A self-adaptive clustering scheme with a time-decay function for microblogging text mining 2011 *Communications in Computer and Information Science* 185 CCIS PART 2 62 71
- 256 Lee C.-H., Wu C.-H., Chien T.-F. BursT: A dynamic term weighting scheme for mining microblogging messages 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6677 LNCS PART 3 548 557

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 257 Lee C.-H., Yang H.-C., Chien T.-F., Wen W.-S. A novel approach for event detection by mining spatio-temporal information on microblogs 2011 Proceedings - 2011 International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2011 5992610  
254 259
- 258 Lee C., Kwak H., Park H., Moon S. Finding influentials based on the temporal order of information adoption in Twitter 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10  
1137 1138
- 259 Lee Hughes A., Palen L. Twitter adoption and use in mass convergence and emergency events 2009 International Journal of Emergency Management 6 03-Apr 248 260
- 260 Lee J., Liu Y., Yu L. SGST: An open source semantic geostreaming toolkit 2011 Proceedings of the 2nd ACM SIGSPATIAL International Workshop on GeoStreaming, IWGS 2011 17 20
- 261 Lee J.G., Antoniadis P., Salamatian K. Faving reciprocity in content sharing communities a comparative analysis of Flickr and Twitter 2010 Proceedings - 2010 International Conference on Advances in Social Network Analysis and Mining, ASONAM 2010 5562780  
136 143
- 262 Lee J.G., Kim Y.-M., Park J., Cha J.-W. Recommending the meanings of newly coined words 2011 Procedia - Social and Behavioral Sciences 27  
267 273
- 263 Lee K., Caverlee J., Cheng Z., Sui D.Z. Content-driven detection of campaigns in social media 2011 International Conference on Information and Knowledge Management, Proceedings 551 556
- 264 Lee K., Caverlee J., Webb S. The social honeypot project: Protecting online communities from spammers 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10  
1139 1140
- 265 Lee K., Caverlee J., Webb S. Uncovering social spammers: Social honeypots + machine learning 2010 SIGIR 2010 Proceedings - 33rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval 435 442
- 266 Lee R., Sumiya K. Measuring geographical regularities of crowd behaviors for Twitter-based geo-social event detection 2010 Proceedings of the 2nd ACM SIGSPATIAL International Workshop on Location Based Social Networks, LBSN 2010 - Held in Conjunction with ACM SIGSPATIAL GIS 2010  
1 10
- 267 Lee R., Wakamiya S., Sumiya K. Discovery of unusual regional social activities using geo-tagged microblogs 2011 World Wide Web 14 4  
321 349
- 268 Leibert F., Mannix J., Lin J., Hamadani B. Automatic management of partitioned, replicated search services 2011 Proceedings of the 2nd ACM Symposium on Cloud Computing, SOCC 2011 a27
- 269 Li B., Si X., Lyu M.R., King I., Chang E.Y. Question identification on twitter2011 International Conference on Information and Knowledge Management, Proceedings 2477 2480

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 270 Li G., Cao J., Jiang J., Li Q., Yao L. Brand tweets: How to popularize the enterprise Micro-blogs 2011 Proceedings - 2011 6th IEEE Joint International Information Technology and Artificial Intelligence Conference, ITAIC 2011 1 6030169 136 139
- 271 Li G., Hoi S.C.H., Chang K., Jain R. Micro-blogging sentiment detection by collaborative online learning 2010 Proceedings - IEEE International Conference on Data Mining, ICDM 5694057 893 898
- 272 Li H., Bhowmick S.S., Sun A. CASINO: Towards conformity-aware social influence analysis in online social networks 2011 International Conference on Information and Knowledge Management, Proceedings 1007 1012
- 273 Li J.-Y., Yeh M.-Y. On sampling type distribution from heterogeneous social networks 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6635 LNAI PART 2 111 122
- 274 Li L., Zhang S. The Twitter-based research of personal knowledge management 2010 2010 3rd International Symposium on Knowledge Acquisition and Modeling, KAM 2010 5646220 5 7
- 275 Li L.T., Yang S., Kavanaugh A., Fox E.A., Sheetz S.D., Shoemaker D., Whalen T., Srinivasan V. Twitter use during an emergency event: The case of the UT Austin shooting 2011 ACM International Conference Proceeding Series 335 336
- 276 Li W., Grossman T., Matejka J., Fitzmaurice G. TwitApp: In-product micro-blogging for design sharing 2011 UIST'11 - Proceedings of the 24th Annual ACM Symposium on User Interface Software and Technology 185 194
- 277 Li W., Serdyukov P., De Vries A.P., Eickhoff C., Larson M. The where in the tweet 2011 International Conference on Information and Knowledge Management, Proceedings 2473 2476
- 278 Li Y.-M., Li T.-Y. Deriving marketing intelligence over microblogs 2011 Proceedings of the Annual Hawaii International Conference on System Sciences 5718694
- 279 Lin C.-S., Chiang M.-F., Peng W.-C., Chen C.-C. An event-based POI service from microblogs 2011 APNOMS 2011 - 13th Asia-Pacific Network Operations and Management Symposium: Managing Clouds, Smart Networks and Services, Final Program 6076994
- 280 Lin C.X., Zhao B., Mei Q., Han J. PET: A statistical model for popular events tracking in social communities 2010 Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 929 938
- 281 Lin J., Snow R., Morgan W. Smoothing techniques for adaptive online language models: Topic tracking in tweet streams 2011 Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 422 429
- 282 Lindgren S., Lundstrom R. Pirate culture and hacktivist mobilization: The cultural and social protocols of #Wikileaks on Twitter 2011 New Media and Society 13 6 999 1018
- 283 Lopez-de-Ipina D., Diaz-de-Sarralde I., Garcia-Zubia J. An ambient assisted living platform integrating RFID data-on-tag care annotations and

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

Twitter	2010	Journal of Universal Computer Science	16	12
	1521	1538		
284	Lotan G.	Mapping information flows on twitter	2011	AAAI
	Workshop - Technical Report	WS-11-03	23	27
285	Loudon L., Hall H.	From triviality to business tool: The case of Twitter in library and information services delivery	2010	Business Information Review
	27	4	236	241
286	Lowe B., Laffey D.	Is twitter for the birds? Using twitter to enhance student learning in a marketing course	2011	Journal of Marketing Education
	33	2	183	192
287	Lussier J.T., Chawla N.V.	Network effects on tweeting	2011	
	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)		6926	LNAI
	209	220		
288	Magee J., Betke M.	HAIL: Hierarchical adaptive interface layout	2010	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)
	LNCS PART 1		139	146
289	Mainka A.	Twitter:"Chirping "or targeted information transfer? [Twitter:"Gezwitscher" oder Gezielte Informationsvermittlung?]	2010	
	Information-Wissenschaft und Praxis	61	2	77 82
290	Makice K.	Phatics and the design of community	2009	
	Conference on Human Factors in Computing Systems - Proceedings		3133	3136
291	Mao H., Shuai X., Kapadia A.	Loose tweets: An analysis of privacy leaks on twitter	2011	Proceedings of the ACM Conference on Computer and Communications Security
			1	11
292	Marasanapalle J., Vignesh T.S., Srinivasan P.K., Saha A.	Business intelligence from twitter for the television media: A case study	2010	2010 IEEE International Workshop on Business Applications of Social Network Analysis, BASNA 2010
			5730304	
293	Marcus A., Bernstein M.S., Badar O., Karger D.R., Madden S., Miller R.C.	Tweets as data: Demonstration of TweepQL and TwitInfo	2011	Proceedings of the ACM SIGMOD International Conference on Management of Data
			1259	1261
294	Marcus A., Bernstein M.S., Badar O., Karger D.R., Madden S., Miller R.C.	TwitInfo: Aggregating and visualizing microblogs for event exploration	2011	Conference on Human Factors in Computing Systems - Proceedings
			227	236
295	Markham S.A., Belkasim S.	Collaborating across international boundaries ... using twitter as a tool in the classroom	2011	ITiCSE'11 - Proceedings of the 16th Annual Conference on Innovation and Technology in Computer Science
			382	
296	Markman V.G.	Unsupervised discovery of fine-grained topic clusters in twitter posts	2011	AAAI Workshop - Technical Report WS-11-05
			32	37
297	Marshall C.C., Shipman F.M.	Social media ownership: Using Twitter as a window onto current attitudes and beliefs	2011	Conference on Human Factors in Computing Systems - Proceedings
			1081	1090

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 298 Marshall, Catherine C.; Shipman, Frank Attitudes about Institutional Archiving of Social Media 2011 ARCHIVING 2011: PRESERVATION STRATEGIES AND IMAGING TECHNOLOGIES FOR CULTURAL HERITAGE INSTITUTIONS AND MEMORY ORGANIZATIONS 194  
198
- 299 Martinez Teutle A.R. Twitter: Network properties analysis 2010 CONIELECOMP 2010 - 20th International Conference on Electronics Communications and Computers 5440773 180 186
- 300 Marwick A., Boyd D. To see and be seen: Celebrity practice on twitter 2011 Convergence 17 2 139 158
- 301 Marwick A.E., Boyd D. I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience 2011 New Media and Society 13 1 114 133
- 302 Mathioudakis M., Koudas N. TwitterMonitor: Trend detection over the twitter stream 2010 Proceedings of the ACM SIGMOD International Conference on Management of Data 1155 1157
- 303 McAllister B. Why "the conversation" isn't necessarily a conversation 2010 Interactions 17 5 19 21
- 304 McCord M., Chuah M. Spam detection on twitter using traditional classifiers 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6906 LNCS 175 186
- 305 McFedries P. Technically speaking: All a-twitter 2007 IEEE Spectrum 44 10 84
- 306 McGee J., Caverlee J.A., Cheng Z. A geographic study of tie strength in social media 2011 International Conference on Information and Knowledge Management, Proceedings 2333 2336
- 307 McNely B.J. Backchannel persistence and collaborative meaning-making 2009 SIGDOC'09 - Proceedings of the 27th ACM International Conference on Design of Communication 297 303
- 308 Meleson R., Romero D., Rouvoy R., Seinturier L. An sca-based approach for social and pervasive communications in home environments 2011 Scientific Annals of Computer Science 21 151  
173
- 309 Mendes P.N., Passant A., Kapanipathi P. Twarql: Tapping into the wisdom of the crowd 2010 ACM International Conference Proceeding Series
- 310 Mendoza M., Poblete B., Castillo C. Twitter under crisis: Can we trust what we RT? 2010 SOMA 2010 - Proceedings of the 1st Workshop on Social Media Analytics 71 79
- 311 Michelson M., Macskassy S.A. Discovering users' topics of interest on twitter: A first look 2010 International Conference on Information and Knowledge Management, Proceedings 73 79
- 312 Milano, Roberta; Baggio, Rodolfo; Piattelli, Robert The effects of online social media on tourism websites 2011 INFORMATION AND COMMUNICATION TECHNOLOGIES IN TOURISM 2011 471 483
- 313 Milstein S. Twitter for libraries (and librarians) 2009 Online (Wilton, Connecticut) 33 2 34 35

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 314 Mistry V. Critical care training: Using Twitter as a teaching tool  
2011 *British Journal of Nursing* 20 20 1292 1296
- 315 Moh T.-S., Murmann A.J. Can you judge a man by his friends? -  
Enhancing spammer detection on the twitter microblogging platform using  
friends and followers 2010 *Communications in Computer and  
Information Science* 54 210 220
- 316 Mowbray M. The twittering machine 2010 HP Laboratories  
Technical Report 54
- 317 Mowbray M. A rice cooker wants to be my friend on twitter 2011 HP  
Laboratories Technical Report 175
- 318 Munson S.A., Rosengren E., Resnick P. Thanks and tweets: Comparing  
two public displays 2011 *Proceedings of the ACM Conference on Computer  
Supported Cooperative Work, CSCW* 331 340
- 319 Murphy J. Micro-blogging for science and technology libraries  
2008 *Science and Technology Libraries* 28 4 375  
378
- 320 Murthy D., Gross A., Longwell S. Twitter and e-health: A case study of  
visualizing cancer networks on Twitter 2011 *International Conference on  
Information Society, i-Society 2011* 5978519 110 113
- 321 Murthy D., Gross A., Oliveira D. Understanding cancer-based networks  
in Twitter using social network analysis 2011 *Proceedings - 5th IEEE  
International Conference on Semantic Computing, ICSC 2011*  
6061372 559 566
- 322 Mustafaraj E., Anderson S.D. Learning about machine learning: An  
extended assignment to classify twitter accounts 2011 *Proceedings of the 24th  
International Florida Artificial Intelligence Research Society, FLAIRS - 24*  
376 381
- 323 Mustafaraj E., Takis P. What edited retweets reveal about online  
political discourse 2011 *AAAI Workshop - Technical Report WS-11-05*  
38 43
- 324 Naaman M., Becker H., Gravano L. Hip and trendy: Characterizing  
emerging trends on Twitter 2011 *Journal of the American Society for  
Information Science and Technology* 62 5 902 918
- 325 Naaman M., Boase J., Lai C.-H. Is it really about me?: Message content  
in social awareness streams 2010 *Proceedings of the ACM Conference on  
Computer Supported Cooperative Work, CSCW* 189  
192
- 326 Nagarajan M., Gomadam K., Sheth A.P., Ranabahu A., Mutharaju R., Jadhav  
A. Spatio-temporal-thematic analysis of citizen sensor data: Challenges and  
experiences 2009 *Lecture Notes in Computer Science (including subseries  
Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*  
5802 LNCS 539 553
- 327 Nakamura M., Miyazawa Y., Kidera Y., Moriyama T., Tamaki M. CiVo:  
Real-time visualization of social activities by cartoonized twitter 2011  
*Lecture Notes in Computer Science (including subseries Lecture Notes in  
Artificial Intelligence and Lecture Notes in Bioinformatics)* 6972 LNCS  
349 353

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 328 Nakamura, Mitsuhiro; Deguchi, Hiroshi Cognitive-Costed Agent Model of the Microblogging Network 2011 AGENT-BASED APPROACHES IN ECONOMIC AND SOCIAL COMPLEX SYSTEMS VI 8 75 84
- 329 Narayanan A., Shmatikov V. De-anonymizing social networks 2009 Proceedings - IEEE Symposium on Security and Privacy 5207644 173 187
- 330 Narr S., De Luca E.W., Albayrak S. Extracting semantic annotations from twitter 2011 International Conference on Information and Knowledge Management, Proceedings 15 16
- 331 Nasirifard P., Hayes C. A real-time tweet diffusion advisor for #Twitter 2011 Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW 587 588
- 332 Nasirifard P., Hayes C. Tadvise: A twitter assistant based on twitter lists 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6984 LNCS 153 160
- 333 Naveed N., Gottron T., Kunegis J., Alhadi A.C. Searching microblogs: Coping with sparsity and document quality 2011 International Conference on Information and Knowledge Management, Proceedings 183 188
- 334 Nesbitt J., Thomas A. Bridging the digital divide one tweet at a time: Twitter-enabled devices for family communication 2010 Conference on Human Factors in Computing Systems - Proceedings 3949 3954
- 335 Ng W.S., Sharlin E. Tweeting halo: Clothing that tweets 2010 UIST 2010 - 23rd ACM Symposium on User Interface Software and Technology, Adjunct Proceedings 447 448
- 336 Nguyen T.-M., Kawamura T., Tahara Y., Ohsuga A. Capturing users' buying activity at Akihabara electric town from twitter 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6422 LNAI PART 2 163 171
- 337 Nishida K., Banno R., Fujimura K., Hoshide T. Tweet classification by data compression 2011 International Conference on Information and Knowledge Management, Proceedings 29 34
- 338 Noordhuis P., Heijkoop M., Lazovik A. Mining Twitter in the cloud: A case study 2010 Proceedings - 2010 IEEE 3rd International Conference on Cloud Computing, CLOUD 2010 5558003 107 114
- 339 Notess G.R. Searching the Twitter realm 2008 Online (Wilton, Connecticut) 32 4 43 45
- 340 Oda M. The characteristics of the use of Twitter by beginners: Study of the applicability to the e-healthcare 2011 Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics 6083834 1268 1273
- 341 Oh O., Agrawal M., Rao H.R. Information control and terrorism: Tracking the Mumbai terrorist attack through twitter 2011 Information Systems Frontiers 13 1 33 43
- 342 Oka M., Hope T., Hashimoto Y., Uno R., Lee M.-H. A collective map to capture human behavior for the design of public spaces 2011 Conference on



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

## Human Factors in Computing Systems - Proceedings

- 2245 2250
- 343 Okazaki M., Matsuo Y. Semantic Twitter: Analyzing tweets for real-time event notification 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6045 LNCS M4D 63 74
- 344 Orita A., Hada H. Is that really you?: An approach to assure identity without revealing real-name online 2009 Proceedings of the ACM Conference on Computer and Communications Security 17 20
- 345 Ostrowski D.A. Sentiment mining within social media for topic identification 2010 Proceedings - 2010 IEEE 4th International Conference on Semantic Computing, ICSC 2010 5629112 394 401
- 346 Ozsoy S. Use of new media by Turkish fans in sport communication: Facebook and Twitter 2011 Journal of Human Kinetics 28 1 165 176
- 347 Paek T., Hsu B.-J. Sampling representative phrase sets for text entry experiments: A procedure and public resource 2011 Conference on Human Factors in Computing Systems - Proceedings 2477 2480
- 348 Pal A., Counts S. Identifying topical authorities in microblogs 2011 Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM 2011 45 54
- 349 Palmer J. Hybrid Elicitation of Latent Intent in Open Societies (HELIOS) 2011 2011 2nd Worldwide Cybersecurity Summit, WCS 2011 5978789
- 350 Park B.-W., Lee K.C. Effects of knowledge sharing and social presence on the intention to continuously use social networking sites: The case of Twitter in Korea 2010 Communications in Computer and Information Science 124 CCIS 60 69
- 351 Park J., Kim H., Cha M., Jeong J. CEO's apology in twitter: A case study of the fake beef labeling incident by E-mart 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6984 LNCS 300 303
- 352 Pattern D. A day in the Twitter life of a library systems manager 2011 Serials 24 1 98 99
- 353 Peddinti V.M.K., Chintalapoodi P. Domain adaptation in sentiment analysis of twitter 2011 AAAI Workshop - Technical Report WS-11-05 44 49
- 354 Pennacchiotti M., Popescu A.-M. Democrats, republicans and starbucks aficionados: User classification in twitter 2011 Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 430 438
- 355 Perera R.D.W., Anand S., Subbalakshmi K.P., Chandramouli R. Twitter analytics: Architecture, tools and analysis 2010 Proceedings - IEEE Military Communications Conference MILCOM 5680493 2186 2191

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 356 Perez C., Lemercier M., Birregah B., Corpel A. SPOT 1.0: Scoring suspicious profiles on Twitter 2011 Proceedings - 2011 International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2011 5992627 377 381
- 357 Perez-Tellez F., Pinto D., Cardiff J., Rosso P. On the difficulty of clustering company tweets 2010 International Conference on Information and Knowledge Management, Proceedings 95 102
- 358 Perfitt T., Englert B. Megaphone: Fault tolerant, scalable, and trustworthy P2P microblogging 2010 5th International Conference on Internet and Web Applications and Services, ICIW 2010 5476495 469 477
- 359 Peter U., Hruz T. Clustering signature in complex social networks 2009 Proceedings - 12th IEEE International Conference on Computational Science and Engineering, CSE 2009 4 5284139 237 244
- 360 Phelan O., McCarthy K., Bennett M., Smyth B. On using the real-time web for news recommendation & discovery 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 103 104
- 361 Phelan O., McCarthy K., Smyth B. Using twitter to recommend real-time topical news 2009 RecSys'09 - Proceedings of the 3rd ACM Conference on Recommender Systems 385 388
- 362 Phelan O., McCarthy K., Smyth B. Buzzer - Online real-time topical news article and source recommender 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6206 LNAI 251 261
- 363 Pho H., Han S.C., Kang B.H. Emergency-affected population identification and notification by using online social networks 2011 Communications in Computer and Information Science 257 CCIS 541 550
- 364 Phuvipadawat S., Murata T. Breaking news detection and tracking in Twitter 2010 Proceedings - 2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology - Workshops, WI-IAT 2010 5616930 120 123
- 365 Poblete B., Garcia R., Mendoza M., Jaimes A. Do all birds tweet the same? Characterizing twitter around the world 2011 International Conference on Information and Knowledge Management, Proceedings 1025 1030
- 366 Pollitt M. Forensic Twitter 2010 Journal of Digital Forensic Practice 3 1 1 3
- 367 Pontin J. The new money: Square, founded by the creator of Twitter, lets people accept credit cards with their smart phones. That innovation could transform transactions in surprising ways 2011 Technology Review 114 2 40 45
- 368 Popescu A.-M., Jain A. Understanding the functions of business accounts on Twitter 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 107 108

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 369 Popescu A.-M., Pennacchiotti M. Detecting controversial events from twitter2010 International Conference on Information and Knowledge Management, Proceedings 1873 1876
- 370 Popescu A.-M., Pennacchiotti M., Paranjpe D. Extracting events and event descriptions from Twitter 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 105 106
- 371 Potts L., Jones D. Contextualizing experiences: Tracing the relationships between people and technologies in the social web 2011 *Journal of Business and Technical Communication* 25 338 358
- 372 Potts L., Seitzinger J., Jones D., Harrison A. Tweeting disaster: Hashtag constructions and collisions2011 SIGDOC'11 - Proceedings of the 29th ACM International Conference on Design of Communication 235 240
- 373 Power R., Forte D. War & Peace in Cyberspace: Don't twitter away your organisation's secrets 2008 *Computer Fraud and Security* 2008 8 18 20
- 374 Pozdnoukhov A., Kaiser C. Space-time dynamics of topics in streaming text 2011 3rd ACM SIGSPATIAL International Workshop on Location-Based Social Networks, LBSN 2011 - Held in Conjunction with the 19th ACM SIGSPATIAL GIS 2011
- 375 Prier K.W., Smith M.S., Giraud-Carrier C., Hanson C.L. Identifying health-related topics on twitter an exploration of tobacco-related tweets as a test topic 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6589 LNCS 18 25
- 376 Pujol J.M., Erramilli V., Siganos G., Yang X., Laoutaris N., Chhabra P., Rodriguez P. The little engine(s) that could: Scaling online social networks 2010 SIGCOMM'10 - Proceedings of the SIGCOMM 2010 Conference 375 386
- 377 Qazvinian V., Rosengren E., Radev D.R., Mei Q. Rumor has it: Identifying misinformation in microblogs 2011 EMNLP 2011 - Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference 1589 1599
- 378 Qiu T., Feng J., Ge Z., Wang J., Xu J., Yates J. Listen to me if you can: Tracking user experience of mobile network on social media 2010 Proceedings of the ACM SIGCOMM Internet Measurement Conference, IMC 288 293
- 379 Rababaah H., Shirkhodaie A. Twitter web-service for soft agent reporting in persistent surveillance systems 2010 Proceedings of SPIE - The International Society for Optical Engineering 7709 77090L
- 380 Ragland K.R. Share with everyone 2010 *Printwear* 23 11 36 37
- 381 Rangrej A., Kulkarni S., Tendulkar A.V. Comparative study of clustering techniques for short text documents 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 111 112

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 382 Rao D., Yarowsky D., Shreevats A., Gupta M. Classifying latent user attributes in Twitter 2010 International Conference on Information and Knowledge Management, Proceedings 37 44
- 383 Rao T., Nagpal S. Real-time geo influence in social networks 2011 ICECT 2011 - 2011 3rd International Conference on Electronics Computer Technology 1 5941598 246 250
- 384 Ratkiewicz J., Conover M., Meiss M., Goncalves B., Patil S., Flammini A., Menczer F. Truthy: Mapping the spread of astroturf in microblog streams 2011 Proceedings of the 20th International Conference Companion on World Wide Web, WWW 2011 249 252
- 385 Rehmann K.-T., Muller M.-F., Schottner M. Adaptive conflict unit size for distributed optimistic synchronization 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6271 LNCS PART 1 547 559
- 386 Reips U.-D., Garaizar P. Mining twitter: A source for psychological wisdom of the crowds 2011 Behavior Research Methods 43 3 635 642
- 387 Reynolds W.N., Weber M.S., Farber R.M., Corley C., Cowell A.J., Gregory M. Social media and social reality: Theory, evidence and validation 2010 ISI 2010 - 2010 IEEE International Conference on Intelligence and Security Informatics: Public Safety and Security 5484733 221 226
- 388 Rinaldo S.B., Tapp S., Laverie D.A. Learning by tweeting: Using twitter as a pedagogical tool 2011 Journal of Marketing Education 33 2 193 203
- 389 Ritter A., Cherry C., Dolan W.B. Data-driven response generation in social media 2011 EMNLP 2011 - Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference 583 593
- 390 Rocha Jr. J.B., Gkorgkas O., Jonassen S., Norvag K. Efficient processing of top-k spatial keyword queries 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6849 LNCS 205 222
- 391 Rodrigues T., Benevenuto F., Cha M., Gummadi K., Almeida V. On word-of-mouth based discovery of the web 2011 Proceedings of the ACM SIGCOMM Internet Measurement Conference, IMC 381 396
- 392 Rohwer P. A note on human computation limits 2010 Workshop Proceedings - Human Computation Workshop 2010, HCOMP2010 38 40
- 393 Romero D.M., Galuba W., Asur S., Huberman B.A. Influence and passivity in social media 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6913 LNAI PART 3 18 33
- 394 Ronen R., Shmueli O. Concurrent one-way protocols in around-the-clock social networks 2010 Proceedings of the ACM SIGMOD International Conference on Management of Data 13

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 395 Ross C., Terras M., Warwick C., Welsh A. Enabled backchannel: Conference Twitter use by digital humanists 2011 *Journal of Documentation* 67 2 214 237
- 396 Rowe M., Angeletou S., Alani H. Predicting discussions on the social semantic web 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6643 LNCS PART 2 405 420
- 397 Rowlands T., Hawking D., Sankaranarayana R. New-web search with microblog annotations 2010 *Proceedings of the 19th International Conference on World Wide Web, WWW '10* 1293 1296
- 398 Ruonan L., Xiangxiang L., Xin W. Assessment of communication impacts of education institutions: A case study of the microblogs of Wuhan University and New Oriental Education and Technology Group 2011 2011 *International Conference on E-Business and E-Government, ICEE2011 - Proceedings* 5881748 1134 1137
- 399 Ruth A. Reading in the hyperconnected information era: Lessons from the Beijing ticket scam 2009 *Australian Journal of Teacher Education* 34 2 1 14
- 400 Rybalko S., Seltzer T. Dialogic communication in 140 characters or less: How Fortune 500 companies engage stakeholders using Twitter 2010 *Public Relations Review* 36 4 336 341
- 401 Sadikov E., Medina M., Leskovec J., Garcia-Molina H. Correcting for missing data in information cascades 2011 *Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM 2011* 55 64
- 402 Saebø O. Understanding Twitter use among parliament representatives: A genre analysis 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6847 LNCS 1 12
- 403 Sahito F., Latif A., Slany W. Weaving twitter stream into linked data a proof of concept framework 2011 *7th International Conference on Emerging Technologies, ICET 2011* 6048497
- 404 Said Hung, Elias; Arcila Calderon, Carlos Online opinion leaders in Colombia, Venezuela and Iran. Case Top20 most view users in Twitter 2011 *COMUNICACION Y SOCIEDAD* 24 1 75 100
- 405 Saito J., Yukawa T. Extracting user interest for user recommendation based on folksonomy 2011 *IEICE Transactions on Information and Systems* E94-D 6 1329 1332
- 406 Sakaguchi T., Akaho Y., Takagi T., Shintani T. Recommendations in twitter using conceptual fuzzy sets 2010 *Annual Conference of the North American Fuzzy Information Processing Society - NAFIPS* 5548208
- 407 Sakaki T., Okazaki M., Matsuo Y. Earthquake shakes Twitter users: Real-time event detection by social sensors 2010 *Proceedings of the 19th International Conference on World Wide Web, WWW '10* 851 860
- 408 Sangani K. Yes, we can Twitter 2009 *Engineering and Technology* 4 6 34 35

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 409 Sankaranarayanan J., Samet H., Teitler B.E., Lieberman M.D., Sperling J. TwitterStand: News in tweets 2009 GIS: Proceedings of the ACM International Symposium on Advances in Geographic Information Systems 42 51
- 410 Santos A.C., Cardoso J.M.P., Ferreira D.R., Diniz P.C. Mobile context provider for social networking 2009 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 5872 LNCS 464 473
- 411 Scanfeld D., Scanfeld V., Larson E.L. Dissemination of health information through social networks: Twitter and antibiotics 2010 American Journal of Infection Control 38 3 182 188
- 412 Schiffman J., Zhang X., Gibbs S. DAuth: Fine-grained authorization delegation for distributed web application consumers 2010 Proceedings - 2010 IEEE International Symposium on Policies for Distributed Systems and Networks, Policy 2010 5630217 95 102
- 413 Schneider A., Jackson R., Baum N. Social media networking: Facebook and Twitter 2010 Journal of Medical Practice Management 26 3 156 157
- 414 Segerberg A., Bennett W.L. Social media and the organization of collective action: Using twitter to explore the ecologies of two climate change protests 2011 Communication Review 14 3 197 215
- 415 Shamma D.A., Kennedy L., Churchill E.F. Tweet the debates: Understanding community annotation of uncollected sources 2009 1st ACM SIGMM International Workshop on Social Media, WSM'09, Co-located with the 2009 ACM International Conference on Multimedia, MM'09 3 10
- 416 Shamma D.A., Kennedy L., Churchill E.F. Peaks and persistence: Modeling the shape of microblog conversations 2011 Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW 355 358
- 417 Sharifi B., Hutton M.-A., Kalita J.K. Experiments in microblog summarization 2010 Proceedings - SocialCom 2010: 2nd IEEE International Conference on Social Computing, PASSAT 2010: 2nd IEEE International Conference on Privacy, Security, Risk and Trust 5590862 49 56
- 418 Shekar C., Wakade S., Liszka K.J., Chan C.-C. Mining pharmaceutical spam from Twitter 2010 Proceedings of the 2010 10th International Conference on Intelligent Systems Design and Applications, ISDA'10 5687162 813 817
- 419 Shen Y., Tian C., Li S., Liu S. The grand information flows in micro-blog 2009 Journal of Information and Computational Science 6 2 683 690
- 420 Shiells K., Alonso O., Lee H.J. Generating document summaries from user annotations 2010 International Conference on Information and Knowledge Management, Proceedings 25 26
- 421 Shirakihara W., Oishi T., Hasegawa R., Hujita H., Koshimura M. Trendspotter detection system for twitter 2011 ICAART 2011 -

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- Proceedings of the 3rd International Conference on Agents and Artificial Intelligence 1 625 628
- 422 Shroff G., Sharma S., Agarwal P., Bhat S. A blackboard architecture for data-intensive information fusion using locality-sensitive hashing 2011 Fusion 2011 - 14th International Conference on Information Fusion 5977651
- 423 Signorini A., Segre A.M., Polgreen P.M. The use of Twitter to track levels of disease activity and public concern in the U.S. during the influenza A H1N1 pandemic 2011 PLoS ONE 6 5 e19467
- 424 Silva F., Silva T., Loureiro A., Ruiz L. Internal contexts inference system for ubiquitous context-aware applications 2010 iiWAS2010 - 12th International Conference on Information Integration and Web-Based Applications and Services 776 779
- 425 Silva I.S., Gomide J., Veloso A., Meira Jr. W., Ferreira R. Effective sentiment stream analysis with self-augmenting training and demand-driven projection 2011 SIGIR'11 - Proceedings of the 34th International ACM SIGIR Conference on Research and Development in Information Retrieval 475 484
- 426 Simma A., Jordan M.I. Modeling events with cascades of Poisson processes 2010 Proceedings of the 26th Conference on Uncertainty in Artificial Intelligence, UAI 2010 546 555
- 427 Simon A. Social heroes: Games as APIs for social interaction 2008 Proceedings - 3rd International Conference on Digital Interactive Media in Entertainment and Arts, DIMEA 2008 40 45
- 428 Sindhvani V., Ghoting A., Ting E., Lawrence R. Extracting insights from social media with large-scale matrix approximations 2011 IBM Journal of Research and Development 55 5 6032776
- 429 Singh V.K., Gao M., Jain R. From microblogs to social images: Event analytics for situation assessment 2010 MIR 2010 - Proceedings of the 2010 ACM SIGMM International Conference on Multimedia Information Retrieval 433 436
- 430 Singh V.K., Gao M., Jain R. Situation detection and control using spatio-temporal analysis of microblogs 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10 1181 1182
- 431 Singh V.K., Gao M., Jain R. Social pixels: Genesis and evaluation 2010 MM'10 - Proceedings of the ACM Multimedia 2010 International Conference 481 490
- 432 Singh V.K., Jain R. Structural analysis of the emerging event-web 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10 1183 1184
- 433 Small T.A. What the hashtag?: A content analysis of Canadian politics on Twitter 2011 Information Communication and Society 14 6 872 895
- 434 Smid H., Winterboer A., Mast P., Evers V., Tromp M. 'Canary in a Coal Mine': Monitoring air quality and detecting environmental incidents by harvesting twitter 2011 Conference on Human Factors in Computing Systems - Proceedings 1855 1860

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 435 Smith B.G. Socially distributing public relations: Twitter, Haiti, and interactivity in social media 2010 Public Relations Review 36 4  
329 335
- 436 Smith M.S., Giraud-Carrier C. Bonding vs. bridging social capital: A case study in twitter 2010 Proceedings - SocialCom 2010: 2nd IEEE International Conference on Social Computing, PASSAT 2010: 2nd IEEE International Conference on Privacy, Security, Risk and Trust 5591261 385 392
- 437 Smrz P., Otrusina L. Finding indicators of epidemiological events by analysing messages from Twitter and other social networks 2011 International Conference on Information and Knowledge Management, Proceedings 7 10
- 438 Song S., Li Q., Zheng N. A spatio-temporal framework for related topic search in micro-blogging 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6335 LNCS 63 73
- 439 Sousa D., Sarmiento L., Rodrigues E.M. Characterization of the twitter @replies network: Are user ties social or topical? 2010 International Conference on Information and Knowledge Management, Proceedings 63 70
- 440 Sousa Silva R., Laboreiro G., Sarmiento L., Grant T., Oliveira E., Maia B. 'twazn me!!! ;(' automatic authorship analysis of micro-blogging messages 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6716 LNCS 161 168
- 441 Spina D., Amigo E., Gonzalo J. Filter keywords and majority class strategies for company name disambiguation in twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6941 LNCS 50 61
- 442 Sreenivasan N.D., Lee C.S., Goh D.H.-L. Tweet me home: Exploring information use on Twitter in crisis situations 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6778 LNCS 120 129
- 443 Sriram B., Fuhry D., Demir E., Ferhatosmanoglu H., Demirbas M. Short text classification in twitter to improve information filtering 2010 SIGIR 2010 Proceedings - 33rd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval 841 842
- 444 Starbird K., Palen L., Hughes A.L., Vieweg S. Chatter on The Red: What hazards threat reveals about the social life of microblogged information 2010 Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW 241 250
- 445 Stepanyan K., Borau K., Ullrich C. A social network analysis perspective on student interaction within the twitter microblogging environment 2010 Proceedings - 10th IEEE International Conference on Advanced Learning Technologies, ICALT 2010 5571143 70 72
- 446 Stieger S., Burger C. Let's go formative: Continuous student ratings with Web 2.0 application Twitter 2010 Cyberpsychology, Behavior, and Social Networking 13 2 163 167



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 447 Stocco G., Savell R., Cybenko G. Dynamic social network analysis using conversational dynamics in social networking and microblogging environments  
2010 Proceedings of SPIE - The International Society for Optical Engineering 7666 766606
- 448 Stonedahl F., Rand W., Wilensky U. Evolving viral marketing strategies  
2010 Proceedings of the 12th Annual Genetic and Evolutionary Computation Conference, GECCO '10 1195 1202
- 449 Streibel O., Alnemr R. Trend-based and reputation-versed personalized news network  
2011 International Conference on Information and Knowledge Management, Proceedings 3 9
- 450 Stringhini G., Kruegel C., Vigna G. Detecting spammers on social networks  
2010 Proceedings - Annual Computer Security Applications Conference, ACSAC 1 9
- 451 Stuart D. What are libraries doing on twitter?  
2010 Online (Wilton, Connecticut) 34 1 45 47
- 452 Su X.Y., Suominen H., Hanlen L. Machine intelligence for health information: Capturing concepts and trends in social media via query expansion  
2011 Studies in Health Technology and Informatics 150 157 168
- 453 Suh B., Hong L., Piroli P., Chi E.H. Want to be retweeted? Large scale analytics on factors impacting retweet in twitter network  
2010 Proceedings - SocialCom 2010: 2nd IEEE International Conference on Social Computing, PASSAT 2010: 2nd IEEE International Conference on Privacy, Security, Risk and Trust 5590452 177 184
- 454 Sui Y., Yang X. The potential marketing power of microblog  
2010 2010 2nd International Conference on Communication Systems, Networks and Applications, ICCSNA 2010 1 5588676 164 167
- 455 Surapat W., Prompoon N. Social clues powered, personalized software engineering messages classification  
2010 ISCIT 2010 - 2010 10th International Symposium on Communications and Information Technologies 5665156 1114 1119
- 456 Suzumura T., Oiki T. StreamWeb: Real-time Web monitoring with stream computing  
2011 Proceedings - 2011 IEEE 9th International Conference on Web Services, ICWS 2011 6009445 620 627
- 457 Sweetser K.D., Kelleher T. A survey of social media use, motivation and leadership among public relations practitioners  
2011 Public Relations Review 37 4 425 428
- 458 Szomszor M., Kostkova P., St Louis C. Twitter informatics: Tracking and understanding public reaction during the 2009 Swine Flu pandemic  
2011 Proceedings - 2011 IEEE/WIC/ACM International Conference on Web Intelligence, WI 2011 1 6036779 320 323
- 459 Takagi K., Rzepka R., Araki K. Just keep tweeting, dear: Web-mining methods for helping a social robot understand user needs  
2011 AAAI Spring Symposium - Technical Report SS-11-05 60 65
- 460 Takahashi T., Abe S., Igata N. Can Twitter be an alternative of real-world sensors?  
2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6763 LNCS PART 3 240 249

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 461 Takeuchi T., Ono M., Onojima Y., Yoshida S., Kimura K., Sakurai S., Hayashi O., Narumi T., Nishimura K., Tanikawa T., Hirose M. Visualization of simultaneous experiences by multi sided recording of an event 2010 2010 16th International Conference on Virtual Systems and Multimedia, VSMM 2010 5665952 281 284
- 462 Takumi S., Miyamoto S. Agglomerative hierarchical clustering using asymmetric similarity based on a bag model and application to information on the web 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 7027 LNAI 187 196
- 463 Talbot D. Can twitter make money? 2010 Technology Review 113 2 52 57
- 464 Tan C., Lee L., Tang J., Jiang L., Zhou M., Li P. User-level sentiment analysis incorporating social networks 2011 Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 1397 1405
- 465 Tang J., Patterson D.J. Twitter, sensors and UI: Robust context modeling for interruption management 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6075 LNCS 123 134
- 466 Teevan J., Ramage D., Morris M.R. #TwitterSearch: A comparison of microblog search and web search 2011 Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM 2011 35 44
- 467 Teranishi Y., Shimojo S. MONAC: SNS message dissemination over smartphone-based DTN and cloud 2011 2011 IEEE International Conference on Peer-to-Peer Computing, P2P 2011 - Proceedings 6038726 158 159
- 468 Teufel P., Kraxberger S. Extracting semantic knowledge from Twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6847 LNCS 48 59
- 469 Thai N., Zaragoza K., Christensen T. An implementation for accessing twitter across challenged networks 2011 Proceedings of the Annual International Conference on Mobile Computing and Networking, MOBICOM 71 72
- 470 Thelwall M., Buckley K., Paltoglou G. Sentiment in Twitter events 2011 Journal of the American Society for Information Science and Technology 62 2 406 418
- 471 Thomas K., Grier C., Ma J., Paxson V., Song D. Design and evaluation of a real-time URL spam filtering service 2011 Proceedings - IEEE Symposium on Security and Privacy 5958045 447 462
- 472 Thomas K., Grier C., Song D., Paxson V. Suspended accounts in retrospect: An analysis of twitter spam 2011 Proceedings of the ACM SIGCOMM Internet Measurement Conference, IMC 243 258
- 473 Thomas K., Nicol D.M. The Koobface botnet and the rise of social malware? 2010 Proceedings of the 5th IEEE International Conference on

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- Malicious and Unwanted Software, Malware 2010 5665793  
63 70
- 474 Thongsuk C., Haruechaiyasak C., Saelee S. Multi-classification of business types on Twitter based on topic model 2011 ECTI-CON 2011 - 8th Electrical Engineering/ Electronics, Computer, Telecommunications and Information Technology (ECTI) Association of Thailand - Conference 2011 5947886 508 511
- 475 Thureau C., Kersting K., Bauckhage C. Yes we can - Simplex volume maximization for descriptive web-scale matrix factorization 2010 International Conference on Information and Knowledge Management, Proceedings 1785 1788
- 476 Tian Y., Wang W., Wang X., Rao J., Chen C., Ma J. Topic detection and organization of mobile text messages 2010 International Conference on Information and Knowledge Management, Proceedings 1877 1880
- 477 Treiber M., Schall D., Dustdar S., Scherling C. Tweetflows - Flexible workflows with Twitter 2011 Proceedings - International Conference on Software Engineering 1 7
- 478 Tripathy R.M., Bagchi A., Mehta S. A study of rumor control strategies on social networks 2010 International Conference on Information and Knowledge Management, Proceedings 1817 1820
- 479 Tsagkalidou K., Koutsonikola V., Vakali A., Kafetsios K. Emotional aware clustering on micro-blogging sources 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6974 LNCS PART 1 387 396
- 480 Tumasjan, Andranik; Sprenger, Timm O.; Sandner, Philipp G.; Welp, Isabell M. Election Forecasts With Twitter: How 140 Characters Reflect the Political Landscape 2011 SOCIAL SCIENCE COMPUTER REVIEW 29 4 402 418
- 481 Twardowski D.C., Cybenko G.V. Synchronization properties of cyber behaviors 2010 Proceedings of SPIE - The International Society for Optical Engineering 7709 77090C
- 482 Tyma A. Connecting with what is out there!: Using twitter in the large lecture 2011 Communication Teacher 25 3 175 181
- 483 Tynan D. Is that a social network in your pocket? 2007 PC World (San Francisco, CA) 25 8 49
- 484 Tynan D. Eight ways Twitter will change your life 2008 PC World (San Francisco, CA) 26 11 20 23
- 485 Ueno M., Mori N., Matsumoto K. Novel chatterbot system utilizing web information 2010 Advances in Intelligent and Soft Computing 79 605 612
- 486 Ueno M., Mori N., Matsumoto K. On novel chatterbot system by means of web information 2011 Proceedings - 2011 8th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2011 3 6019804 1391 1395
- 487 Ulicny B., Kokar M.M. Toward formal reasoning with epistemic policies about information quality in the twittersphere 2011 Fusion 2011 -

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

14th International Conference on Information Fusion 5977511

488 Ullrich C., Borau K., Stepanyan K. Who students interact with? A social network analysis perspective on the use of twitter in language learning

2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6383

LNCS 432 437

489 Ushiyama T., Eguchi T. An information recommendation agent on microblogging service 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in

Bioinformatics) 6682 LNAI 573 582

490 Uysal I., Croft W.B. User oriented tweet ranking: A filtering approach to microblogs 2011 International Conference on Information and Knowledge Management, Proceedings 2261 2264

491 Vacharasintopchai T., Jesdabodi C., Nguyen T.N. An intelligent agent for ubiquitous travel information assistance with location awareness 2010

2010 6th International Conference on Wireless Communications, Networking and Mobile Computing, WiCOM 2010 5600093

492 Van Liere D. How far does a tweet travel? Information brokers in the twitterverse 2010 Proceedings of the International Workshop on Modeling Social Media, MSM '10 6

493 Van Meeteren M., Poorthuis A., Dugundji E. Mapping communities in large virtual social networks: Using Twitter data to find the indie mac community 2010 2010 IEEE International Workshop on Business Applications of Social Network Analysis, BASNA 2010 5730297

494 Vergeer M., Hermans L., Sams S. Is the voter only a tweet away? Microblogging during the 2009 European Parliament election campaign in the Netherlands 2011 First Monday 16 8

495 Vieweg S., Hughes A.L., Starbird K., Palen L. Microblogging during two natural hazards events: What twitter may contribute to situational awareness 2010 Conference on Human Factors in Computing Systems - Proceedings 2 1079 1088

496 Wagner C., Strohmaier M. The wisdom in tweetonomies: Acquiring latent conceptual structures from social awareness streams 2010 ACM International Conference Proceeding Series

497 Wahid A., Bontchev B. Platform for extraction, visualization and analysis of search trends 2010 Proceedings of the 8th International Conference on Frontiers of Information Technology, FIT'10 13

498 Wakamiya S., Lee R., Sumiya K. Crowd-based urban characterization: Extracting crowd behavioral patterns in urban areas from Twitter 2011 3rd ACM SIGSPATIAL International Workshop on Location-Based Social Networks, LBSN 2011 - Held in Conjunction with the 19th ACM SIGSPATIAL GIS 2011

499 Wakamiya S., Lee R., Sumiya K. Towards better TV viewing rates: Exploiting crowd's media life logs over Twitter for TV rating 2011 Proceedings of the 5th International Conference on Ubiquitous

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 500 Wakamiya S., Lee R., Sumiya K. Urban area characterization based on semantics of crowd activities in Twitter 2011 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6631 LNCS 108 123
- 501 Wang A.H. Detecting spam bots in online social networking sites: A machine learning approach 2010 *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 6166 LNCS 335 342
- 502 Wang A.H. Don't follow me - Spam detection in twitter 2010 *SECURITY 2010 - Proceedings of the International Conference on Security and Cryptography* 142 151
- 503 Wang H., Wang F., Liu J. On long-term social relationships in peer-to-peer systems 2011 *IEEE International Workshop on Quality of Service, IWQoS 2011* 5931242
- 504 Wang T., Chen Y., Zhang Z., Sun P., Deng B., Li X. Unbiased sampling in directed social graph 2010 *SIGCOMM'10 - Proceedings of the SIGCOMM 2010 Conference* 401 402
- 505 Wang T., Srivatsa M., Agrawal D., Liu L. Modeling data flow in socio-information networks: A risk estimation approach 2011 *Proceedings of ACM Symposium on Access Control Models and Technologies, SACMAT 2011* 113 122
- 506 Wang W., Wu B. Comparing Twitter and Chinese native Microblog 2011 *2011 2nd Worldwide Cybersecurity Summit, WCS 2011* 5978794
- 507 Wang X., Wei F., Liu X., Zhou M., Zhang M. Topic sentiment analysis in twitter: A graph-based hashtag sentiment classification approach 2011 *International Conference on Information and Knowledge Management, Proceedings* 1031 1040
- 508 Wang, Chiou-Pirng; Chan, K. C. Who are the real followers in the Twitter? 2010 *BUSINESS TRANSFORMATION THROUGH INNOVATION AND KNOWLEDGE MANAGEMENT: AN ACADEMIC PERSPECTIVE, VOLS 1-4* 1113 1113
- 509 Wanichayapong N., Pruthipunyaskul W., Pattara-Atikom W., Chaovalit P. Social-based traffic information extraction and classification 2011 *2011 11th International Conference on ITS Telecommunications, ITST 2011* 6060036 107 112
- 510 Watanabe K., Ochi M., Okabe M., Onai R. Jasmine: A real-time local-event detection system based on geolocation information propagated to microblogs 2011 *International Conference on Information and Knowledge Management, Proceedings* 2541 2544
- 511 Waters R.D., Jamal J.Y. Tweet, tweet, tweet: A content analysis of nonprofit organizations' Twitter updates 2011 *Public Relations Review* 3 321 324
- 512 Waters R.D., Tindall N.T.J., Morton T.S. Media catching and the journalist-public relations practitioner relationship: How social media are changing the practice of media relations 2010 *Journal of Public Relations Research* 22 3 241 264

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 513 Waters R.D., Williams J.M. Squawking, tweeting, cooing, and hooting: Analyzing the communication patterns of government agencies on Twitter  
2011 Journal of Public Affairs 11 4 353 363
- 514 Webberley W., Allen S., Whitaker R. Retweeting: A study of message-forwarding in twitter 2011 Proceedings - 2011 Workshop on Mobile and Online Social Networks, MOSN 2011 6060787 13  
18
- 515 Weberg D. Twitter and Simulation: Tweet Your Way to Better Sim  
2009 Clinical Simulation in Nursing 5 2 e63  
e65
- 516 Welch M.J., Schonfeld U., He D., Cho J. Topical semantics of twitter links 2011 Proceedings of the 4th ACM International Conference on Web Search and Data Mining, WSDM 2011 327 336
- 517 Weng J., Lim E.-P., He Q., Leung C.W.-K. What do people want in microblogs? Measuring interestingness of hashtags in Twitter 2010 Proceedings - IEEE International Conference on Data Mining, ICDM 5694095 1121 1126
- 518 Weng J., Lim E.-P., Jiang J., He Q. TwitterRank: Finding topic-sensitive influential twitterers 2010 WSDM 2010 - Proceedings of the 3rd ACM International Conference on Web Search and Data Mining 261 270
- 519 Weng J., Yao Y., Leonardi E., Lee B.-S. Event detection in twitter 2011 HP Laboratories Technical Report 98 1 21
- 520 Westman S., Freund L. Information interaction in 140 characters or less: Genres on Twitter 2010 IliX 2010 - Proceedings of the 2010 Information Interaction in Context Symposium 323  
326
- 521 Wigand F.D.L. Twitter in government: Building relationships one tweet at a time 2010 ITNG2010 - 7th International Conference on Information Technology: New Generations 5501673 563 567
- 522 Wilson J. Playing with politics: Political fans and Twitter faking in post-broadcast democracy 2011 Convergence 17 4 445  
461
- 523 Wohn D.Y., Na E.-K. Tweeting about TV: Sharing television viewing experiences via social media message streams 2011 First Monday 16 3
- 524 Wright N. Twittering in teacher education: Reflecting on practicum experiences 2010 Open Learning 25 3 259 265
- 525 Wright, Noeline Microblogging for Reflection: Developing Teaching Knowledge Through Twitter 2010 PROCEEDINGS OF THE 5TH INTERNATIONAL CONFERENCE ON E-LEARNING 419 424
- 526 Wu Y., Ren F. Learning sentimental influence in twitter 2011 Proceedings - 2011 International Conference on Future Computer Sciences and Application, ICFCSA 2011 5968040 119  
122
- 527 Xie M., Lakshmanan L.V.S., Wood P.T. Breaking out of the box of recommendations: From items to packages 2010 RecSys'10 - Proceedings

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- of the 4th ACM Conference on Recommender Systems  
151 158
- 528 Xifra J., Grau F. Nanoblogging PR: The discourse on public relations in Twitter 2010 Public Relations Review 36 2 171  
174
- 529 Xu T., Chen Y., Fu X., Hui P. Twittering by Cuckoo - Decentralized and socio-aware online microblogging services 2010 SIGCOMM'10 - Proceedings of the SIGCOMM 2010 Conference 473  
474
- 530 Xu T., Chen Y., Jiao L., Zhao B.Y., Hui P., Fu X. Scaling microblogging services with divergent traffic demands 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 7049 LNCS 20 40
- 531 Xu T., Chen Y., Zhao J., Fu X. Cuckoo: Towards decentralized, socio-aware online microblogging services and data measurements 2010 Proceedings of the 2nd ACM International Workshop on Hot Topics in Planet-scale Measurement, HotPlanet '10 4
- 532 Xu Z., Lu R., Xiang L., Yang Q. Discovering user interest on twitter with a modified author-topic model 2011 Proceedings - 2011 IEEE/WIC/ACM International Conference on Web Intelligence, WI 2011 1  
6040707 422 429
- 533 Xue Z., Yin D., Davison B.D. Normalizing microtext 2011 AAAI Workshop - Technical Report WS-11-05 74 79
- 534 Yamaguchi Y., Amagasa T., Kitagawa H. Tag-based user topic discovery using Twitter lists 2011 Proceedings - 2011 International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2011 5992580 13 20
- 535 Yamaguchi Y., Takahashi T., Amagasa T., Kitagawa H. TURank: Twitter user ranking based on user-tweet graph analysis 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6488 LNCS 240  
253
- 536 Yamamoto H., Matsumura N. Marketing ecosystem: The dynamics of twitter, TV advertising, and customer acquisition 2011 AAAI Workshop - Technical Report WS-11-02 45 52
- 537 Yamasaki S. A dynamic trust estimation method for 'persona' from the human relationship of social web: Social web and trust by the rating of a persona's active audience 2010 Proceedings - 2010 10th Annual International Symposium on Applications and the Internet, SAINT 2010 5598058 300 303
- 538 Yamasaki S. A trust rating method for information providers over the social web service: A pragmatic protocol for trust among information explorers and information providers 2011 Proceedings - 11th IEEE/IPSJ International Symposium on Applications and the Internet, SAINT 2011 6004216 578 582
- 539 Yang H., Chen S., Lyu M.R., King I. Location-based topic evolution 2011 MLBS'11 - Proceedings of the 1st International Workshop on Mobile Location-Based Service 89 98

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 540 Yang Z., Cai K., Tang J., Zhang L., Su Z., Li J. Social context summarization 2011 SIGIR'11 - Proceedings of the 34th International ACM SIGIR Conference on Research and Development in Information Retrieval 255 264
- 541 Yang Z., Guo J., Cai K., Tang J., Li J., Zhang L., Su Z. Understanding retweeting behaviors in social networks 2010 International Conference on Information and Knowledge Management, Proceedings 1633 1636
- 542 Yardi S., Romero D., Schoenebeck G., Boyd D. Detecting spam in a Twitter network 2010 First Monday 15 1
- 543 Ye S., Wu S.F. Measuring message propagation and social influence on Twitter.com 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6430 LNCS 216 231
- 544 Yerva S.R., Miklos Z., Aberer K. What have fruits to do with technology? The case of orange, blackberry and apple 2011 ACM International Conference Proceeding Series
- 545 Yin D., Hong L., Davison B.D. Structural link analysis and prediction in microblogs 2011 International Conference on Information and Knowledge Management, Proceedings 1163 1168
- 546 Yin D., Hong L., Xiong X., Davison B.D. Link formation analysis in microblogs 2011 SIGIR'11 - Proceedings of the 34th International ACM SIGIR Conference on Research and Development in Information Retrieval 1235 1236
- 547 Yonezawa K., Miyaki T., Rekimoto J. Cat@Log: Sensing device attachable to pet cats for supporting human-pet interaction 2009 ACM International Conference Proceeding Series 149 156
- 548 You G.-W., Hwang S.-W., Nie Z., Wen J.-R. SocialSearch: Enhancing entity search with social network matching 2011 ACM International Conference Proceeding Series 515 520
- 549 Young M.M. Twitter me: Using micro-blogging to motivate teenagers to exercise 2010 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6105 LNCS 439 448
- 550 Younus A., Qureshi M.A., Asar F.F., Azam M., Saeed M., Touheed N. What do the average twitterers say: A twitter model for public opinion analysis in the face of major political events 2011 Proceedings - 2011 International Conference on Advances in Social Networks Analysis and Mining, ASONAM 2011 5992646 618 623
- 551 Ypodimatopoulos P., Lippman A. "Follow me": A web-based, location-sharing architecture for large, indoor environments 2010 Proceedings of the 19th International Conference on World Wide Web, WWW '10 1375 1377
- 552 Zangerle E., Gassler W., Specht G. Using tag recommendations to homogenize folksonomies in microblogging environments 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6984 LNCS 113 126



Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". Journal of Documentation, 69 (3).

- 553 Zanzotto F.M., Pennacchiotti M., Tsioutsoulis K. Linguistic redundancy in Twitter 2011 EMNLP 2011 - Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference 659 669
- 554 Zappavigna M. Ambient affiliation: A linguistic perspective on Twitter 2011 New Media and Society 13 5 788 806
- 555 Zhan Xun; Jiang Juan Research on Emergency Information Disclosure Based on Government Micro-Bo-Take China's First Provincial Government Micro-Bo "Micro-Bo Yunnan" as an Example 2010 PROCEEDINGS OF 2010 INTERNATIONAL CONFERENCE ON PUBLIC ADMINISTRATION (6TH), VOL III 725 729
- 556 Zhang C., Sun J., Ding Y. Topic mining for microblog based on MB-LDA model 2011 Jisuanji Yanjiu yu Fazhan/Computer Research and Development 48 10 1795 1802
- 557 Zhang C.M., Paxson V. Detecting and analyzing automated activity on twitter 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6579 LNCS 102 111
- 558 Zhang D., Liu Y., Lawrence R.D., Chenthamarakshan V. ALPOS: A machine learning approach for analyzing microblogging data 2010 Proceedings - IEEE International Conference on Data Mining, ICDM 5693439 1265 1272
- 559 Zhang D., Liu Y., Lawrence R.D., Chenthamarakshan V. Transfer latent semantic learning: Microblog mining with less supervision 2011 Proceedings of the National Conference on Artificial Intelligence 1 561 566
- 560 Zhang H., Dantu R., Cangussu J. Quantifying reciprocity in social networks 2009 Proceedings - 12th IEEE International Conference on Computational Science and Engineering, CSE 2009 4 5283077 1031 1035
- 561 Zhang Hui-ping Analysis of Public Mood in Cyberspace: An Empirical Study Based on Twitter 2010 PROCEEDINGS OF 2010 INTERNATIONAL CONFERENCE ON PUBLIC ADMINISTRATION (6TH), VOL III 357 362
- 562 Zhang J., Qu Y., Cody J., Wu Y. A case study of micro-blogging in the enterprise: Use, value, and related issues 2010 Conference on Human Factors in Computing Systems - Proceedings 1 123 132
- 563 Zhang K., Du Y., Lv X., Shi S. The study and implementation of micro-blog search engine based on nutch 2010 Proceedings of the 2010 2nd International Conference on Future Computer and Communication, ICFCC 2010 1 5497309 V1850 V1854
- 564 Zhang L., Ghosh R., Dekhil M., Hsu M., Liu B. Combining lexicon-based and learning-based methods for twitter sentiment analysis 2011 HP Laboratories Technical Report 89
- 565 Zhang M., Jansen B.J., Chowdhury A. Business engagement on Twitter: A path analysis 2011 Electronic Markets 21 3 161 175

Shirley Ann Williams, Melissa Terras, Claire Warwick (2013). "What people study when they study Twitter: Classifying Twitter related academic papers". *Journal of Documentation*, 69 (3).

- 566 Zhang R., Gao D., Li W. What are tweeters doing: Recognizing speech acts in twitter 2011 AAAI Workshop - Technical Report WS-11-05  
86 91
- 567 Zhang Y., Wang X., Yu H., Li R., Wei B., Pan J. When personalization meets socialization: An iCADAL approach 2011 Proceedings of the ACM/IEEE Joint Conference on Digital Libraries 459 460
- 568 Zhao D., Rosson M.B. How and why people Twitter: The role that micro-blogging plays in informal communication at work 2009 GROUP'09 - Proceedings of the 2009 ACM SIGCHI International Conference on Supporting Group Work 243 252
- 569 Zhao L., Zeng Y., Zhong N. A weighted multi-factor algorithm for microblog search 2011 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 6890 LNCS 153 161
- 570 Zhao X., Xiao W., Chi C., Yang M. Integrating Twitter into wiki to support informal awareness 2011 Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW 733  
736
- 571 Zhou X., Chen H., Jin Q., Yong J. Generating associative ripples of relevant information from a variety of data streams by throwing a heuristic stone 2011 Proceedings of the 5th International Conference on Ubiquitous Information Management and Communication, ICUIMC 2011 59
- 572 Zhou Z., Bandari R., Kong J., Qian H., Roychowdhury V. Information resonance on Twitter: Watching Iran 2010 SOMA 2010 - Proceedings of the 1st Workshop on Social Media Analytics 123  
131
- 573 Zhu K., Ranasinghe N., Edirisinghe C., Cheok A.D., Fernando O.N.N., Cao Y.Y. Poetry mix-up: The 10th muse 2009 ACM International Conference Proceeding Series 461
- 574 Zoltan K., Johann S. Semantic analysis of microposts for efficient people to people interactions 2011 Proceedings - RoEduNet IEEE International Conference 5993688
- 575 Zubiaga A., Spina D., Fresno V., Martinez R. Classifying trending topics: A typology of conversation triggers on Twitter 2011 International Conference on Information and Knowledge Management, Proceedings 2461  
2464
-