

# VisAge: Augmented Reality for Heritage

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## ABSTRACT

In this paper we describe the VisAge project, which explored how a community-based Augmented Reality (AR) system could be used to tell stories and cultural histories about urban environments. Our work focussed on two main themes — user engagement and immersiveness of the experience. To address the first theme, we developed an online portal where anybody could upload digital content and create their own stories using routes through a physical environment. To address the second theme, we developed a flexible, reconfigurable mobile platform to investigate different types and kinds of displays. The performance of the system was assessed in a series of workshops, which have provided insights to inform the development of future systems.

## Author Keywords

Augmented reality; heritage; local memory; co-creation; mobile; location-aware; storytelling; social history.

## ACM Classification Keywords

I.3.7 Three-Dimensional Graphics and Realism (Virtual Reality)

## VIDEO URL

<https://www.youtube.com/watch?v=QaNPAGQOT84>

## INTRODUCTION

Augmented Reality (AR) has the potential to transform the way we can learn about the world around us. AR registers — or overlays — computer generated digital content on the real world [?, ?], providing a sense of immediacy and spatial consistency between virtual and physical elements. Systems have been developed for collaboration, story telling, cultural history and heritage. Our goal is to create an open platform that allows local communities to collectively build or *co-create* shared memories and stories and access these through AR.

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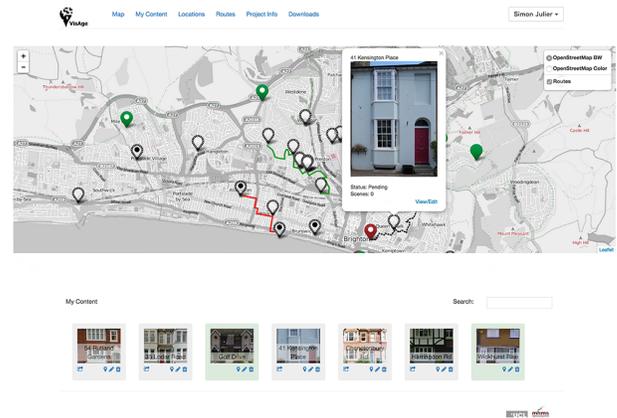


Figure 1. Authoring Tool.

With the growth of high-powered mobile computing, interest in AR has recently exploded. Many commercial AR systems have developed. However, almost all of these are for marketing and advertising [?, ?]. They are developed to allow designers to create the content. As a result, the general public can only play the role of a consumer.

Given this limitation, the VisAge project was created to empower the general public, and to elevate them from mere content consumers to the creators of shared memories.

## THE PROTOTYPE

The prototype system developed an experience based on a set of spatially distributed Points of Interest (POI). Each POI is used to anchor a set of content, which can include images, text and audio. Experiences consist of visiting a sequence of POIs. The prototype consists of authoring and viewing tools.

The web-based authoring tool, shown in Figure 1, provides a front end to the VisAge database. It is map-based: it shows the POIs created by that user, and the POIs published by other users. To create content, an author either selects an existing POI, or clicks on the map to create a new POI. Each POI is associated with a tracking target (which the viewing tool uses to align the content with the real world), together with a set of media, which can include audio, pictures and text. When initially created, the POIs are private to an individual user. If

they publish the POIs, they become visible to all users who can incorporate them within their own experiences.

The viewing tool, shown in Figure 2, consists of a 3D graphical application which runs on smartphones or mobile tablets. When the application is started, it connects to the VisAge database and downloads the location, tracking targets and media for each POI. The tool was written in Unity with the Vuforia tracking library. When the tracking image of a POI becomes visible, the associated content is shown and, where appropriate, interaction options are provided.



Figure 2. Viewing tool.

## ASSESSMENT

VisAge was assessed through two workshops and two user studies. The studies are currently being written up as separate publications and so we only describe the workshops here.

The first workshop, reported in [?], was carried out with six volunteers from The Brunswick Town Charitable Trust. They are potential content creators and they mostly explored the authoring tool. The participants believed that VisAge could be an innovative way to disseminate cultural and historic material. However, the motivation to create content depends on several factors: the intrinsic interest or habit of posting content online, having a genuine interest in the content because of its personal, historical, cultural, educational or sentimental value, and having a good understanding of the technical properties of the system (for example, what kind of tracking images lead to the most robust tracking).

The second workshop was carried out during one day of the 2015 Brighton & Hove Open Door Event. Our pick up point was an outdoor stall. Participants were given a mobile tablet that offered that required them to follow a trail which revealed hidden content at three locations, providing an illustration of the history of the (typical but illustrative) Croxson family over a sixty-year period. Participants were asked to think aloud and were invited to participate in a semi-structured interview. One or two researchers accompanied them throughout. For time reasons, only six participants tested it (four participants as individuals and two as a group). Four of them are volunteers of The Regency Town House. We had three senior and three younger participants, in age groups ranging between 20s and over 60s.

Younger participants responded positively to both authorship and usage. Given their familiarity with social media, they expressed less hesitance in contributing to online platforms. Older participants seem aware of these platforms and of its potentials. However, they expressed a preference for independent learning, or the use of media such as books.

As regards AR, most participants were impressed by the technology and its use to convey social history. However, important feedback was obtained about how AR experiences need to be authored. They felt they needed a story with more clarity. They felt the experience needed to be more immediate and self-contained: for example, links to additional information should be provided then and there because they were unlikely to follow up at a later stage.

## CONCLUSION

In this paper we have described VisAge, a prototype system to allow local communities to co-create shared memories through the use of mobile AR.

Our experience with the initial system has been positive — volunteers believe it has the potential to convey heritage information and would be willing to use it, and participants have been very positive with its response. However, we have also seen that there are many open issues which are yet to be overcome. Some of these, such as more consistent tracking, are technical in nature. However, many issues lie in developing interfaces which are enjoyable and rewarding to use, and to create experiences which are fun to experience.

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