4th Genetic Improvement Workshop (GI 2018 @ ICSE)  
Chairs' Welcome

It is our great pleasure to welcome you to the fourth international Genetic Improvement Workshop, GI-2018, held at ICSE-2018 on 2 June 2018 in Gothenburg, Sweden. Since 2015, the GI workshop has been held annually as part of the Genetic and Evolutionary Computation Conference (GECCO). Indeed a GI workshop will also be held at GECCO 2018 in Japan, however, we are very pleased that the 40th International Conference on Software Engineering (ICSE 2018) agreed to host the fourth international GI workshop. GI-2018 will be the first Genetic Improvement event to be co-located with a major software engineering conference.

The goal of the GI workshops remains to bring together research from across the world to exchange ideas about using optimisation techniques, particularly evolutionary computation such as genetic programming, to improve existing software. We invited short two page position papers to encourage the discussion of new ideas and recent work in addition to longer and more concrete research submissions. The call for participation invited GI work on automated bug-fixing; improving functionality; decreasing memory consumption; decreasing energy consumption; and “plastic surgery” transplanting of new functionality. As you will see, we have accepted papers in most of these areas as well as papers on emergent systems, security, adopting genetic improvement into continuous development and theoretical and landscape studies. We had submissions from Europe, America and Asia. They were exactly evenly split between full-length submissions (5) and two page position papers (5).

Putting together GI-2018 was a team effort. Firstly we thank the authors for providing the content of the program. We would like to thank Claire Le Goues for giving a keynote talk. We are grateful to the program committee who worked very hard in reviewing papers and providing feedback for authors. Finally, we thank our sponsors: GrammaTech and the University of Michigan, and The Engineering and Physical Sciences Research Council (EPSRC) and profits from the book “A Field Guide to Genetic Programming” by Riccardo Poli, William B. Langdon and Nicholas Freitag McPhee.

We hope that you will find these papers thought provoking, and that the workshop will give an opportunity to share ideas with other researchers from institutions around the world. As with the first workshop, we expect that you will notice many areas of software engineering that are not covered. Our primary aim remains to encourage you to participate. We hope for many questions along the lines of: “Can GI do X?” to which the reply may be: please try! Go one step better than Lewis Carroll's White Queen in "Through the Looking-Glass, and What Alice Found There" and do something everyone else considered to be impossible!

Sincerely,
Bill, Justyna, Katie, and Wes
Organizing Committee for the 4th Genetic Improvement Workshop (GI 2018 @ ICSE)

**Workshop Chair**

Justyna Petke  
University College London  
United Kingdom

Kathryn Stolte  
North Carolina State University  
United States

William B. Langdon  
University College London  
United Kingdom

Westley Weimer  
University of Michigan  
United States

**Programme Committee**

Abhik Roychoudhury  
National University of Singapore  
Singapore

Bing Xue  
Victoria University of Wellington  
New Zealand

Brad Alexander  
University of Adelaide  
Australia

Hana Chockler  
North Carolina State University  
United States
Markus Wagner  
University of Adelaide  
Australia

Martin Monperrus  
KTH Royal Institute of Technology  
Sweden

Nicholas Kraft  
ABB  
United States

Sandy Brownlee  
University of Stirling  
United Kingdom

Sigrid Eldh  
Ericsson, Carleton University, Mälardalen University  
Sweden

ThanhVu H. Nguyen  
University of Nebraska-Lincoln  
United States

Yuanyuan Zhang  
University College London  
United Kingdom
Sponsors

Web Sponsorship
We are grateful to the Field Guide for their continued sponsorship of our web presence.