

# **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



### Workshop Chair

Kathryn Stolee  
North Carolina State University  
United States



### Workshop Chair

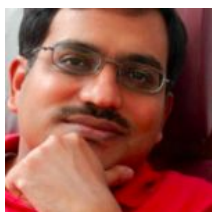
William B. Langdon  
University College London  
United Kingdom



### Workshop Chair

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



Ciera Jaspan

Google  
United States



Claire Le Goues

Carnegie Mellon University  
United States



David R. White

University of Sheffield  
United Kingdom



Emamurho Ugherughe

SAP Berlin  
Germany



Gabriela Ochoa

University of Stirling  
United Kingdom



John R. Woodward

Queen Mary University of London  
United Kingdom



Jonathan Dorn

GrammaTech  
United States



Marija Selakovic

TU Darmstadt  
Germany



Markus Wagner

University of Adelaide  
Australia



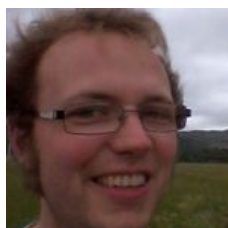
Martin Monperrus

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.

