2019 IEEE/ACM International Workshop on Genetic Improvement (GI 2019)

Montreal, Quebec, Canada
28 May 2019

IEEE Catalog Number: CFP19Q22-POD
ISBN: 978-1-7281-2269-4

Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP19Q22-POD
ISBN (Print-On-Demand): 978-1-7281-2269-4
ISBN (Online): 978-1-7281-2268-7

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

2019 IEEE/ACM International Workshop on Genetic Improvement (GI)

GI 2019

Table of Contents

Welcome from the GI 2019 Workshop Chairs ..... **vii**
GI 2019 Organizing Committee ..... **viii**
GI 2019 Program Committee ..... **ix**
GI 2019 Sponsors ..... **xii**
GI 2019 Invited Keynote Speaker ..... **xiii**

Keynote

Industrial Experience of Genetic Improvement in Facebook 1
Nadia Alshahwan (Facebook Inc.)

Paper Session 1

Leveraging Program Invariants to Promote Population Diversity in Search-Based Automatic Program Repair 2
Zhen Yu Ding (University of Pittsburgh), Yiwei Lyu (Carnegie Mellon University), Christopher Timperley (Carnegie Mellon University), and Claire Le Goues (Carnegie Mellon University)

Better Code Search and Reuse for Better Program Repair 10
Qi Xin (Georgia Institute of Technology) and Steven Reiss (Brown University)

Evolutionary Computation for Improving Malware Analysis 18
Kevin Leach (University of Michigan), Ryan Dougherty (Arizona State University), Chad Spensky (University of California, Santa Barbara), Stephanie Forrest (Arizona State University), and Westley Weimer (University of Michigan)

Paper Session 2

Genetic Improvement of GPU Code 20
Jhe-Yu Liou (Arizona State University), Stephanie Forrest (Arizona State University), and Carole-Jean Wu (Arizona State University)

Mining Patterns from Genetic Improvement Experiments . 28
Oliver Krauss (Johannes Kepler University & University of Applied Sciences Upper Austria), Hanspeter Mössenböck (Johannes Kepler University), and Michael Affenzeller (University of Applied Sciences Upper Austria)

Fuzzy Edit Sequences in Genetic Improvement . 30
Aymeric Blot (University College London)

Author Index 33