2021 IEEE/ACM International Workshop on Automated Program Repair (APR 2021)

Virtual Conference 22 – 30 May 2021



IEEE Catalog Number: ISBN:

CFP21AG7-POD 978-1-6654-4473-6

Copyright © 2021 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:	CFP21AG7-POD
ISBN (Print-On-Demand):	978-1-6654-4473-6
ISBN (Online):	978-1-6654-4472-9

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



2021 IEEE/ACM International Workshop on Automated Program Repair (APR) **APR 2021**

Table of Contents

Foreword to APR 2021 vii
Organizing Committee viii
Program Committee ix

2021 IEEE/ACM International Workshop on Automated Program Repair

Refining Fitness Functions for Search-Based Program Repair .1
Zhiqiang Bian (University College London, United Kingdom), Aymeric Blot (University College London, United Kingdom), and Justyna Petke (University College London, United Kingdom)
Please Hold on: More Time = More Patches? Automated Program Repair as Anytime Algorithms .9 Duc Ly Vu (University of Trento (IT)), Ivan Pashchenko (University of Trento (IT)), and Fabio Massacci (University of Trento (IT), Vrije Universiteit Amsterdam (NL))
Exploring Plausible Patches Using Source Code Embeddings in JavaScript .11 Viktor Csuvik (University of Szeged, Hungary), Dániel Horváth (University of Szeged, Hungary), Márk Lajkó (University of Szeged, Hungary), and László Vidács (University of Szeged, Hungary)
Tackling Software Architecture Erosion: Joint Architecture and Implementation Repairing by a Knowledge-Based Approach .19. Christoph Knieke (Clausthal University of Technology, Germany), Mirco Schindler (Clausthal University of Technology, Germany), and Andreas Rausch (Clausthal University of Technology, Germany)
Domain Invariant-Based Spreadsheet Debugging 21 Xiaoyan Wang (Nanjing Audit University) and Jie Zhao (Nanjing Tech University)
Automated Code Repair to Ensure Spatial Memory Safety .23 William Klieber (Carnegie Mellon University), Ruben Martins (Carnegie Mellon University), Ryan Steele (Carnegie Mellon University), Matt Churilla (Carnegie Mellon University), Mike McCall (Carnegie Mellon University), and David Svoboda (Carnegie Mellon University)
Extractive Summarization of Related Bug-Fixing Comments in Support of Bug Repair .31

Rrezarta Krasniqi (University of Notre Dame, USA)

Challenging the Stigma of Formal Program Repair .33..... Bat-Chen Rothenberg (Technion - Israel Institute of Technology, Israel)

Author Index 35