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Special Issue on

Intelligent Bug Fixing

Call for Papers

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Bug fixing is expensive, which attracts developers and researchers to study how to effectively resolve bugs. Therefore, it has become a hot research topic in software engineering. During the bug fixing process, developers leverage various software artifacts (e.g., bug reports, commits, log files, and source files) and explore multisource heterogeneous information (Q&A websites, web resources, and software communities) to reproduce bugs, localize bugs, identify candidate fixing solutions, apply fixes and validate fixes. The rich data provides important information of bug fixing, which can guide developers to resolve bugs. For example, a bug report not only shows the details of the reported bug, but also shows the potential method of bug fixing. Therefore, how to analyze and utilize such data is an important step for bug fixing.

The special issue will focus on the new generation of bug fixing. Generally, bug fixing process includes bug understanding (i.e., bug reproduction, severity/priority verification, bug summarization, bug classification, and bug knowledge extraction), bug localization, bug fixing, and bug validation. By using data mining, information retrieval, machine learning, natural language processing, artificial intelligence technologies, visualization technologies, human-computer interaction technologies and code analysis technologies, a series of new automated algorithms can be proposed to improve the performance of bug fixing. In this special issue, we solicit high-quality contributions with consolidated and thoroughly evaluated application-oriented research results in the area of new generation of bug fixing. It is intended to (i) provide a summary of research that advances intelligent bug fixing using multiple data analysis and processing techniques, and (ii) serve as a comprehensive collection of some of the current state-of-the-art technologies within this content.

We invite submissions of high-quality papers describing original and significant work in all areas of the new generation of bug fixing including (but not limited to): 1) providing a summary of research that advances intelligent bug fixing using multiple data analysis and processing techniques, and 2) serving as a comprehensive collection of some of the current state-of-the-art technologies within this content. In this special issue, we both invite extended versions of the best papers presented at IBF 2021, and solicit novel submissions related to intelligent bug fixing. Topics of interest include but are not limited to:
- Big Data in Bug Fixing Activities
- Bug Knowledge and Bug Understanding
- Software Artifacts Generation in Bug Fixing Process
- Bug Report Summarization/Enrichment for Fixing Bugs
- Duplicates Detection for Fixing Bugs
- Bug Severity/Priority Prediction for Fixing Bugs

- Bug Fixer Recommendation
- Bug Localization for Fixing Bugs
- Automated Program Repair
- Empirical Studies in Bug Analysis and Fixing
- AI-based Approaches for Bug Fixing
- Intelligent Software Testing for Bug Fixing
- Knowledge Graph for Bug Fixing

Important Dates

- Submission Deadline: June 15, 2021
- First notification: September 15, 2021
- Revision Due: December 15, 2021
- Final Notification: February 15, 2022

Submission Guidelines

We invite high-quality papers focusing on the above described theme and within the broad scope of Journal of Software: Evolution and Process, i.e., submissions should also briefly explain how the work impacts software evolution and process. Authors should prepare their manuscript according to the Guide for Authors of the Software: Evolution and Process. The submission site is http://mc.manuscriptcentral.com/jsme. Please select the label "IBF2021SI" in the submission system. All the papers will be peer-reviewed following the Software: Evolution and Process reviewing procedures. Submitted manuscripts should not have been published previously, nor be under consideration for publication elsewhere. If the submission is an extended work of a previously published conference/workshop paper (including papers from IBF2021), it must include at least 30% material, and must clearly include reference to previous work(s) explaining the novelty of the submission. Moreover, when submitting, authors must include, with their manuscript, a document detailing (1) the "Summary of Differences" between the Conference/workshop paper and extended version paper, (2) a clear list of "new and original" ideas/contributions in the extended version paper (identifying sections where they are presented), and (3) the previously published paper.

Guest Editors

Xiapu Luo
Associate Professor
Hong Kong Polytechnic University, Hong Kong, China (csxluo@comp.polyu.edu.hk)

Weiyi Shang
Associate Professor
Concordia University, Canada (shang@encs.concordia.ca)

Xiaobing Sun
Corresponding Guest Editor
Professor
Yangzhou University, China (xbsun@yzu.edu.cn)

Tao Zhang
Associate Professor
Macau University of Science and Technology, Macau, China (tazhang@must.edu.mo, corresponding editor)

Guest Editors Short CV of the Guest Editors

Xiapu Luo is an Associate Professor in the Department of Computing, The Hong Kong Polytechnic University. He received his PhD in the same university and then spent two years at the Georgia Institute of Technology as a postdoctoral fellow. His current research interests include Mobile/IoT Security and Privacy, Blockchain, Network Security and Privacy, Software Engineering, and Internet Measurement. His work appeared in top venues, such as USENIX SEC, CCS, NDSS, ICSE, USENIX ATC, INFOCOM, TSE, TC, TDSC, TIFS, etc. He has received several Best (student) Paper Awards from well-known conferences, such INFOCOM 2018, ISPEC 2017, ATIS 2017, ISSRE 2016, IFIP SEC 2007, as well as the Best Paper Nominee from ESEM 2019.

Weiyi Shang is an Associate Professor and Concordia University Research Chair in Ultra large-scale Systems at the Department of Computer Science and Software Engineering at Concordia University, Montreal. He has received his Ph.D. and M.Sc. degrees from Queens University (Canada) and he obtained B.Eng. from Harbin Institute of Technology. His research interests include big data software engineering, software engineering for ultra-large-scale systems, software log mining, empirical software engineering, and software performance engineering. His work has been published at premier venues such as ICSE, FSE, ASE, ICSME, MSR and WCRE, as well as in major journals such as TSE, EMSE, JSS, JSEP and SCP. His work has won premium awards, such as SIGSOFT Distinguished paper award at ICSE 2013 and best paper award at WCRE 2011. His industrial experience includes helping improve quality and performance of ultra-large-scale systems in BlackBerry. Early tools and techniques developed by him are already integrated into products used by millions of users worldwide.

Xiaobing Sun is a professor in School of Information Engineering at Yangzhou University. He received his bachelor's degree in computer science and Technology from Jiangsu University of Science and Technology in 2007. Then, he joined School of Computer Science & Engineering at Southeast University, and received his Ph.D in 2012. His research interests include software maintenance and evolution, software repository mining and intelligence analysis, etc. He has been authorized more than 20 patents and published more than 80 papers in referred international journals (STVR, IST, JSS, SCIS, FCS, etc.) and conferences (ICSE, ASE, ICSME, SANER, ICPC, etc.). He is a senior CCF and ACM/IEEE member.

Tao Zhang received his B.S. in Automation and M.Eng in Software Engineering from Northeastern University. He obtained his Ph.D. degree in Computer Science from University of Seoul. After that, Tao spent one year at the Hong Kong Polytechnic University as a Postdoctoral Research Fellow. Currently, he is an associate professor at the Faculty of Information Technology, Macau University of Science and Technology (MUST). He has published more than 50 articles at the famous journals and conferences such as TSE, JSS, IST, IEEE Software, IET Software, ICSE, SANER, ICPC, etc. He is a senior member of IEEE, ACM, and CCF.