

# IEEE Software

## TABLE OF CONTENTS

March/April 2021

Vol. 38 No. 2

### FOCUS

#### THE DIVERSITY CRISIS IN SOFTWARE DEVELOPMENT

##### 19 Guest Editors' Introduction

The Diversity Crisis in Software Development

Khaled Albusays, Pernille Bjørn, Laura Dabbish, Denae Ford, Emerson Murphy-Hill, Alexander Serebrenik, and Margaret-Anne Storey

##### 26 How Trans-Inclusive Are Hackathons?

Rafa Prado, Wendy Mendes, Kiev S. Gama, and Gustavo Pinto

##### 32 Impact of Affirmative Action on Female Computer Science/Software Engineering Undergraduate Enrollment

Jocelyn Simmonds, María Cecilia Bastarrica, and Nancy Hitschfeld-Kahler

##### 38 Gendered Experiences of Software Engineers During the COVID-19 Crisis

Leticia S. Machado, Clara Caldeira, Marcelo Gattermann Perin, and Cleidson R.B. de Souza

##### 45 Gender Differences in Public Code Contributions: A 50-Year Perspective

Stefano Zacchiroli

##### 51 Insights Into Nonmerged Pull Requests in GitHub: Is There Evidence of Bias Based on Perceptible Race?

Reza Nadri, Gema Rodríguez-Pérez, and Meiyappan Nagappan

##### 58 How Successful Are Open Source Contributions From Countries With Different Levels of Human Development?

Leonardo B. Furtado, Bruno Cartaxo, Christoph Treude, and Gustavo Pinto

##### 64 Combined Intuition and Rationality Increases Software Feature Novelty for Female Software Designers

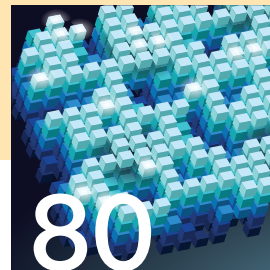
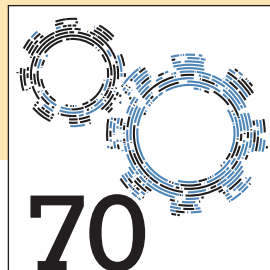
Carianne Pretorius, Maryam Razavian, Katrin Eling, and Fred Langerak

### MISCELLANEOUS

4 Contact Us

COV 3 IEEE Computer Society Information





## FEATURES

### **70** Developing Self-Adaptive Microservice Systems: Challenges and Directions

Nabor C. Mendonça, Pooyan Jamshidi,  
David Garlan, and Claus Pahl

### **80** Quantum Advantage and the Y2K Bug: A Comparison

Lei Zhang, Andriy Miranskyy,  
and Walid Rjaibi

### **88** DRT: A Novel Tool for Data Archiving

Kevin Williams, Yan Li, and Lorne Olfman

### **96** Understanding the Working Time of Developers in IT Companies in China and the United States

Jiayun Zhang, Yang Chen, Qingyuan Gong,  
Xin Wang, Aaron Yi Ding, Yu Xiao, and Pan Hui

## DEPARTMENTS

### **3** From the Editor Mom, Where Are the Girls? Ipek Ozkaya

### **7** Software Technology Technology Trends: Strategies for the New Normal Christof Ebert and Bertrand Tavernier

### **15** Requirements Requirements for the New Normal: Requirements Engineering in a Pandemic Sarah Gregory

### **107** Practitioners' Digest Behavioral Science and Diversity in Software Engineering Jeffrey C. Carver, Henry Muccini, Birgit Penzenstadler, Rafael Prikladnicki, Alexander Serebrenik, and Thomas Zimmermann

### **114** SE for AI Shockingly Simple: “Keys” for Better AI for SE Tim Menzies

### **119** Insights What Is the Future of Modeling? Antonio Bucchiarone, Federico Ciccozzi, Leen Lambers, Alfonso Pierantonio, Matthias Tichy, Massimo Tisi, Andreas Wortmann, and Vadim Zaytsev

### **128** The Pragmatic Designer Headwinds to Redesign Michael Keeling

### **134** Software Engineering Radio Matt Lacey on Mobile App Usability Gavin Henry