

**2022 IEEE/ACM 44th  
International Conference on  
Software Engineering:  
New Ideas and Emerging Results  
(ICSE-NIER 2022)**

**Pittsburgh, Pennsylvania, USA  
22-27 May 2022**



**IEEE Catalog Number: CFP22L71-POD  
ISBN: 978-1-6654-9597-4**

**Copyright © 2022 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:	CFP22L71-POD
ISBN (Print-On-Demand):	978-1-6654-9597-4
ISBN (Online):	978-1-6654-9596-7

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2022 IEEE/ACM 44th International Conference on Software Engineering: New Ideas and Emerging Results (ICSE-NIER) **ICSE-NIER 2022**

## Table of Contents

Message from the ICSE 2022 General Co-Chairs .....	viii
Message from the NIER Chairs of ICSE 2022 .....	x
Program Committee of ICSE-NIER 2022 .....	xi

### ICSE-NIER 2022

A Black Box Technique to Reduce Energy Consumption of Android Apps .....	1
<i>Abdul Ali Bangash (University of Alberta, Canada), Karim Ali (University of Alberta, Canada), and Abram Hindle (University of Alberta, Canada)</i>	
A Case for Microservices Orchestration Using Workflow Engines .....	6
<i>Anas Nadeem (North Dakota State University, USA) and Muhammad Zubair Malik (North Dakota State University, USA)</i>	
Are We Training with The Right Data? Evaluating Collective Confidence in Training Data Using Dempster Shafer Theory .....	11
<i>Sangeeta Dey (Ajou University, South Korea) and Seok-Won Lee (Ajou University, South Korea)</i>	
Automating Staged Rollout with Reinforcement Learning .....	16
<i>Shadow Pritchard (University of Tulsa, USA), Vidhyashree Nagaraju (University of Tulsa, USA), and Lance Fiondella (University of Massachusetts Dartmouth, USA)</i>	
Better Modeling the Programming World with Code Concept Graphs-Augmented Multi-Modal Learning .....	21
<i>Martin Weyssow (DIRO, Université de Montréal, Canada), Houari Sahraoui (DIRO, Université de Montréal, Canada), and Bang Liu (DIRO &amp; Mila, Université de Montréal, Canada)</i>	
BreakBot: Analyzing the Impact of Breaking Changes to Assist Library Evolution .....	26
<i>Lina Ochoa (Eindhoven University of Technology), Thomas Degueule (Univ. Bordeaux, Bordeaux INP, CNRS, LaBRI, UMR5800, France), and Jean-Rémy Falleri (Univ. Bordeaux, Bordeaux INP, CNRS, LaBRI, UMR5800, Institut Universitaire de France, France)</i>	

Evaluating Commit Message Generation: To BLEU Or Not To BLEU? .....	31
<i>Samanta Dey (Chennai Mathematical Institute, India), Venkatesh Vinayakarao (Chennai Mathematical Institute, India), Monika Gupta (IBM Research, India), and Sampath Dechu (IBM Research, India)</i>	
Expressing the Adaptation Intent as a Sustainability Goal .....	36
<i>Ilias Gerostathopoulos (Vrije Universiteit Amsterdam, The Netherlands), Claudia Raibulet (Vrije Universiteit Amsterdam, The Netherlands), and Patricia Lago (Vrije Universiteit Amsterdam, The Netherlands)</i>	
Grammars for Free: Toward Grammar Inference for Ad Hoc Parsers .....	41
<i>Michael Schröder (TU Wien, Austria) and Jürgen Cito (TU Wien and Meta Platforms, Inc., Austria)</i>	
Improving the Learnability of Machine Learning APIs by Semi-Automated API Wrapping .....	46
<i>Lars Reimann (Smart Data Analytics Group, Institute for Computer Science III, University of Bonn, Germany) and Günter Kniesel-Wünsche (Smart Data Analytics Group, Institute for Computer Science III, University of Bonn, Germany)</i>	
Investigating User Perceptions of Conversational Agents for Software-Related Exploratory Web Search .....	51
<i>Matthew Frazier (University of Delaware, USA), Shaayal Kumar (University of Delaware, USA), Kostadin Damevski (Virginia Commonwealth University, USA), and Lori Pollock (University of Delaware, USA)</i>	
Just Enough, Just in Time, Just for "Me": Fundamental Principles for Engineering IoT-Native Software Systems .....	56
<i>Zheng Li (University of Concepción, Chile) and Rajiv Ranjan (Newcastle University, UK)</i>	
Kind Computing .....	61
<i>Faeq Alrimawi (Lero - the Science Foundation Ireland Research Centre for Software, Ireland) and Bashar Nuseibeh (The Open University, UK &amp; Lero, Ireland)</i>	
MLSmellHound: A Context-Aware Code Analysis Tool .....	66
<i>Jai Kannan (Deakin University, Australia), Scott Barnett (Deakin University, Australia), Luís Cruz (Delft University of Technology, Netherlands), Anj Simmons (Deakin University, Australia), and Akash Agarwal (Deakin University, Australia)</i>	
Runtime Prevention of Deserialization Attacks .....	71
<i>François Gauthier (Oracle Labs, Australia) and Sora Bae (Oracle Labs, Australia)</i>	
Statistical Reasoning About Programs .....	76
<i>Marcel Böhme (Max Planck Institute for Security and Privacy (MPI-SP), Germany; Monash University, Australia)</i>	
Supporting Program Comprehension by Generating Abstract Code Summary Tree .....	81
<i>Avijit Bhattacharjee (University of Saskatchewan, Canada), Banani Roy (University of Saskatchewan, Canada), and Kevin A. Schneider (University of Saskatchewan, Canada)</i>	

Terminals All the Way Down .....	86
<i>Michael MacInnis (Carleton University, Canada), Olga Baysal (Carleton University, Canada), and Michele Lanza (USI, Lugano, Switzerland)</i>	
The Best Defense is a Good Defense: Adapting Negotiation Methods for Tackling Pressure over Software Project Estimates .....	91
<i>Patricia G. F. Matsubara (Federal University of Amazonas (UFAM) &amp; Federal University of Mato Grosso do Sul (UFMS), Brazil), Igor Steinmacher (Federal University of Technology - Paraná (UTFPR), Brazil), Bruno Gadelha (Federal University of Amazonas (UFAM), Brazil), and Tayana Conte (Federal University of Amazonas (UFAM), Brazil)</i>	
Towards a Reference Software Architecture for Human-AI Teaming in Smart Manufacturing .....	96
<i>Philipp Haindl (Software Competence Center Hagenberg, Austria), Georg Buchgeher (Software Competence Center Hagenberg, Austria), Maqbool Khan (Pak-Austria Fachhochschule - Institute of Applied Sciences and Technology, Pakistan), and Bernhard Moser (Software Competence Center Hagenberg, Austria)</i>	
Towards Incremental Build of Software Configurations .....	101
<i>Georges Aaron Randrianaina (Univ Rennes, CNRS, Inria, IRISA - UMR 6074, France), Djamel Eddine Khelladi (Univ Rennes, CNRS, Inria, IRISA - UMR 6074, France), Olivier Zendra (Univ Rennes, CNRS, Inria, IRISA - UMR 6074, France), and Mathieu Acher (Univ Rennes, CNRS, Inria, IRISA - UMR 6074, Institut Universitaire de France (IUF), France)</i>	
Towards Mining OSS Skills from GitHub Activity .....	106
<i>Jenny T. Liang (University of Washington, USA), Thomas Zimmermann (Microsoft Research, USA), and Denae Ford (Microsoft Research, USA)</i>	
Towards Property-Based Tests in Natural Language .....	111
<i>Colin S. Gordon (Drexel University, USA)</i>	
Toward the Analysis of Graph Neural Networks .....	116
<i>Thanh-Dat Nguyen (University of Melbourne, Australia), Thanh Le-Cong (Hanoi University of Science and Technology, Vietnam), ThanhVu H. Nguyen (George Mason University, USA), Xuan-Bach D. Le (University of Melbourne, Australia), and Quyet-Thang Huynh (Hanoi University of Science and Technology, Vietnam)</i>	
Utilising Persistence for Post Facto Suppression of Invalid Anomalies Using System Logs .....	121
<i>Dipanwita Guhathakurta (IIIT Hyderabad, India), Pooja Aggarwal (IBM Research, India), Seema Nagar (IBM Research, India), Rohan Arora (IBM Research, Yorktown Heights), and Bing Zhou (IBM Research, Yorktown Heights)</i>	
What Do You Want From Me? Adapting Systems to the Uncertainty of Human Preferences .....	126
<i>Carlos Gavidia-Calderon (The Open University, United Kingdom), Amel Bennaceur (The Open University, United Kingdom), Anastasia Kordoni (Lancaster University, United Kingdom), Mark Levine (Lancaster University, United Kingdom), and Bashar Nuseibeh (The Open University, United Kingdom)</i>	
<b>Author Index .....</b>	<b>131</b>