

2018 ACM/IEEE 5th International Conference on Mobile Software Engineering and Systems **MOBILESoft 2018**

Table of Contents

Message from ICSE 2018 General Chair	x
Message from MOBILESoft 2018 Chairs	xiii
Organizing Committee	xiv
Program Committee	xvi
Subreviewers	xvii
ICSE 2018 Sponsors and Supporters	xviii

MOBILESoft 2018 - Keynote

Development, Testing and Maintenance of Android Apps: Challenges, Approaches, Tools, and Future Directions	1
<i>Denys Poshyvanyk (College of William and Mary)</i>	

MobileSoft 2018 - S1: Maliciousness

Ares: Triggering Payload of Evasive Android Malware	2
<i>Luciano Bello (IBM Research) and Marco Pistoia (IBM Research)</i>	
Orlis: Obfuscation-Resilient Library Detection for Android	13
<i>Yan Wang (The Ohio State University), Haowei Wu (The Ohio State University), Hailong Zhang (The Ohio State University), and Atanas Rountev (The Ohio State University)</i>	
AnFlo: Detecting Anomalous Sensitive Information Flows in Android Apps	24
<i>Biniam Fisseha Demissie (Fondazione Bruno Kessler), Mariano Ceccato (Fondazione Bruno Kessler), and Lwin Khin Shar (Nanyang Technological University)</i>	

MobileSoft 2018 - S2: Student Research Competition Madness

Identifying Architectural Technical Debt in Android Applications through Automated Compliance Checking	35
<i>Roberto Verdecchia (Gran Sasso Science Institute)</i>	

Programming Support for Data Intensive Distributed Mobile Applications at the Edge	37
<i>Breno Dantas Cruz (Virginia Polytechnic Institute and State University (Virginia Tech))</i>	
Classifying Code Comments in Java Mobile Applications	39
<i>Luca Pascarella (Delft University of Technology)</i>	
Improving Android Permissions Models for Increased User Awareness and Security	41
<i>Jeffrey Palmerino (Rochester Institute of Technology)</i>	
Does Source Code Quality Reflect the Ratings of Apps?	43
<i>Gemma Catolino (University of Salerno)</i>	

MobileSoft 2018 - S3: Permissiveness

An Investigation Into Android Run-Time Permissions from the End Users' Perspective	45
<i>Gian Luca Scoccia (Gran Sasso Science Institute), Stefano Ruberto (Gran Sasso Science Institute), Ivano Malavolta (Vrije Universiteit Amsterdam), Marco Autili (University of L'Aquila), and Paola Inverardi (University of L'Aquila)</i>	
Investigating User Perception and Comprehension of Android Permission Models	56
<i>Anthony Peruma (Rochester Institute of Technology), Jeffrey Palmerino (Rochester Institute of Technology), and Daniel E. Krutz (Rochester Institute of Technology)</i>	
Automated Detection and Repair of Incompatible Uses of Runtime Permissions in Android Apps	67
<i>Malinda Dilhara (University of Moratuwa), Haipeng Cai (Washington State University), and John Jenkins (Washington State University)</i>	

MobileSoft 2018 - S4: Poster & Tool Demo Madness

TYDR – Track Your Daily Routine. Android App for Tracking Smartphone Sensor and Usage Data	72
<i>Felix Beierle (Technische Universität Berlin), Vinh Thuy Tran (Technische Universität Berlin), Mathias Allemand (University of Zurich), Patrick Neff (University of Regensburg), Winfried Schlee (University of Regensburg), Thomas Probst (Danube University Krems), Rüdiger Pryss (Ulm University), and Johannes Zimmermann (Psychologische Hochschule Berlin)</i>	
MobiCoMonkey - Context Testing of Android Apps	76
<i>Amit Seal Ami (Institute of Information Technology), Md. Mehedi Hasan (Institute of Information Technology), Md. Rayhanur Rahman (Institute of Information Technology), and Kazi Sakib (Institute of Information Technology)</i>	
ICC-Inspect: Supporting Runtime Inspection of Android Inter-Component Communications	80
<i>John Jenkins (Washington State University) and Haipeng Cai (Washington State University)</i>	
Analyzing the User Interface of Android Apps	84
<i>Konstantin Kuznetsov (Saarland University / CISPA), Vitalii Avdiienko (Saarland University / CISPA), Alessandra Gorla (IMDEA Software Institute), and Andreas Zeller (Saarland University / CISPA)</i>	

HR-Auth: Heart Rate Data Authentication Using Consumer Wearables	88
<i>Alfredo J. Perez (Columbus State University), Kevin G. Rivera-Morales (Universidad del Turabo), Miguel A. Labrador (University of South Florida), and Idalides Vergara-Laurens (Universidad del Turabo)</i>	
API for Power-Aware Application Design on Mobile Systems	90
<i>Nadja Peters (Technical University of Munich), Sangyoung Park (Technical University of Munich), Daniel Clifford (Google Inc), Sami Kyostila (Google Inc), Ross McIlroy (Google Inc), Benedikt Meurer (Google Inc), Hannes Payer (Google Inc), and Samarjit Chakraborty (Technical University of Munich)</i>	
A Performance Evaluation of Cross-Platform Mobile Application Development Approaches	92
<i>Aline Ebone (Unisinos), Yongshan Tan (DePaul University), and Xiaoping Jia (DePaul University)</i>	

MobileSoft 2018 - S5: Helpfulness

Intent to Share: Enhancing Android Inter-Component Communication for Distributed Devices	94
<i>Breno Dantas Cruz (Virginia Tech) and Eli Tilevich (Virginia Tech)</i>	
Programming Support for Sharing Resources across Heterogeneous Mobile Devices	105
<i>Zheng Song (Virginia Tech), Sanchit Chadha (Virginia Tech), Antuan Byalik (Virginia Tech), and Eli Tilevich (Virginia Tech)</i>	
Code Offloading Solutions for Audio Processing in Mobile Healthcare Applications: A Case Study	117
<i>Pablo Sanabria (Pontificia Universidad Católica de Chile), Jose I. Benedetto (Pontificia Universidad Católica de Chile), Andres Neyem (Pontificia Universidad Católica de Chile), Jaime Navon (Pontificia Universidad Católica de Chile), and Christian Poellabauer (University of Notre Dame)</i>	

MobileSoft 2018 - S6: Inquisitiveness

Automation of Android Applications Functional Testing Using Machine Learning Activities Classification	122
<i>Ariel Rosenfeld (Weizmann Institute of Science), Odaya Kardashov (Bar-Ilan University), and Orel Zang (Bar-Ilan University)</i>	
Guiding App Testing with Mined Interaction Models	133
<i>Nataniel P. Borges Jr. (Saarland University), Maria Gómez (Saarland University), and Andreas Zeller (Saarland University)</i>	
Self-Reported Activities of Android Developers	144
<i>Luca Pascarella (Delft University of Technology), Franz-Xaver Geiger (Vrije Universiteit Amsterdam), Fabio Palomba (University of Zurich), Dario Di Nucci (Vrije Universiteit Brussel), Ivano Malavolta (Vrije Universiteit Amsterdam), and Alberto Bacchelli (University of Zurich)</i>	
How Do Android Operating System Updates Impact Apps?	156
<i>Guowei Yang (Texas State University), Jeffrey Jones (Rowan University), Austin Moninger (Rice University), and Meiru Che (Concordia University Texas)</i>	

Detecting No-Sleep Energy Bugs Using Reference Counted Variables	161
<i>Scott Hall (Oakland University), Suman Nataraj (Oakland University), and Dae-Kyoo Kim (Oakland University)</i>	

MobileSoft 2018 - S7: Adaptiveness

LiqDroid: Towards Seamlessly Distributed Android Applications	166
<i>Luciano Baresi (DEIB - Politecnico di Milano), Anita Imani (DEIB - Politecnico di Milano), Cristina Frá (TIM S.p.A. - Services Innovation), and Massimo Valla (TIM S.p.A. - Services Innovation)</i>	
Towards a Framework for Proximity-Based Hybrid Mobile Applications	176
<i>Valerio Panzica La Manna (IMEC) and Frank Pasveer (IMEC)</i>	

MobileSoft 2018 - S8: Resourcefulness

Automatic Inference of Java-to-Swift Translation Rules for Porting Mobile Applications	180
<i>Kijin An (Virginia Tech), Na Meng (Virginia Tech), and Eli Tilevich (Virginia Tech)</i>	
Development Frameworks for Mobile Devices: A Comparative Study about Energy Consumption	191
<i>Leonardo Corbalan (Universidad Nacional de la Plata), Juan Fernandez (Universidad Nacional de la Plata), Alfonso Cuitiño (Universidad Nacional de la Plata), Lisandro Delia (Universidad Nacional de la Plata), Germán Cáseres (Universidad Nacional de la Plata), Pablo Thomas (Universidad Nacional de la Plata), and Patricia Pesado (Universidad Nacional de la Plata)</i>	
ANEL: Robust Mobile Network Programming Using a Declarative Language	202
<i>Xinxin Jin (University of California San Diego), William G. Griswold (University of California San Diego), and Yuanyuan Zhou (University of California San Diego)</i>	
Beyond Web/Native/Hybrid: A New Taxonomy for Mobile App Development	214
<i>Robin Nunkesser (Hamm-Lippstadt University of Applied Sciences)</i>	
Vision: Improved Development of Mobile eHealth Applications	219
<i>John Grundy (Monash University), Mohamed Abdelrazek (Deakin University), and Maheswaree Kissoon Curumsing (Deakin University)</i>	

MobileSoft 2018 - S9: Usefulness

P2A: A Tool for Converting Pixels to Animated Mobile Application User Interfaces	224
<i>Siva Natarajan (University of Texas at Arlington) and Christoph Csallner (University of Texas at Arlington)</i>	
GUIFetch: Supporting App Design and Development through GUI Search	236
<i>Farnaz Behrang (Georgia Tech), Steven P. Reiss (Brown University), and Alessandro Orso (Georgia Tech)</i>	
Acceptance Testing of Mobile Applications - Automated Emotion Tracking for Large User Groups	247
<i>Simon André Scherr (Fraunhofer IESE), Frank Elberzhager (Fraunhofer IESE), and Konstantin Holl (Fraunhofer IESE)</i>	

Vision: Mobile eHealth Learning and Intervention Platform	252
<i>Mohamed Abdelrazek (Deakin University), John Grundy (Monash University), Amani Ibrahim (Deakin University), and Andrew Cain (Deakin University)</i>	
Author Index	257