



Published by the IEEE Computer Society
10662 Los Vaqueros Circle
Los Alamitos, CA 90720

IEEE Computer Society Order Number E5962
ISBN 978-1-5090-3848-0
BMS Part Number CFP16SRC-ART



SCAM 2016

16th IEEE International Working Conference
on Source Code Analysis and Manipulation

2-3 October 2016 - Raleigh, North Carolina, USA



IEEE  computer society
CELEBRATING 70 YEARS

tcse 
Technical Council on Software Engineering



Proceedings

2016 IEEE 16th International Working Conference on Source Code Analysis and Manipulation



2–3 October 2016
Raleigh, North Carolina

2016 IEEE 16th International Working Conference on Source Code Analysis and Manipulation

SCAM 2016

Table of Contents

Message from the Chairs	viii
Organizing Committee	ix
Program Committee Research Track	x
Program Committee Engineering Track	xii
Additional Reviewers	xiii
Keynote	xiv
Supporters	xv

Session 1: Software Security and Code Obfuscation

Vulnerability Prediction Models: A Case Study on the Linux Kernel	1
<i>Matthieu Jimenez, Mike Papadakis, and Yves Le Traon</i>	
Assessment of Source Code Obfuscation Techniques	11
<i>Alessio Viticchié, Leonardo Regano, Marco Torchiano, Cataldo Basile, Mariano Ceccato, Paolo Tonella, and Roberto Tiella</i>	
A Security Perspective on Code Review: The Case of Chromium	21
<i>Marco di Biase, Magiel Bruntink, and Alberto Bacchelli</i>	

Session 2: Supporting Software Developers

A Source-Level Energy Optimization Framework for Mobile Applications	31
<i>Xueliang Li and John P. Gallagher</i>	
SATT: Tailoring Code Metric Thresholds for Different Software Architectures	41
<i>Maurício Aniche, Christoph Treude, Andy Zaidman, Arie van Deursen, and Marco Aurélio Gerosa</i>	
Collective Intelligence for Smarter API Recommendations in Python	51
<i>Andrea Renika D'Souza, Di Yang, and Cristina V. Lopes</i>	

Session 3: Engineering Track Papers

BinCFP: Efficient Multi-threaded Binary Code Control Flow Profiling	61
<i>Jiang Ming and Dinghao Wu</i>	
Conc2Seq: A Frama-C Plugin for Verification of Parallel Compositions of C Programs	67
<i>Allan Blanchard, Nikolai Kosmatov, Matthieu Lemerre, and Frédéric Loulergue</i>	
Augur: Incorporating Hidden Dependencies and Variable Granularity in Change Impact Analysis	73
<i>Tushar Sharma and Girish Suryanarayana</i>	
Statically-Informed Dynamic Analysis Tools to Detect Algorithmic Complexity Vulnerabilities	79
<i>Benjamin Holland, Ganesh Ram Santhanam, Payas Awadhutkar, and Suresh Kothari</i>	
Scala-AM: A Modular Static Analysis Framework	85
<i>Quentin Stiévenart, Maarten Vandercammen, Wolfgang De Meuter, and Coen De Roover</i>	
A Program Interpreter Framework for Arbitrary Abstractions	91
<i>Jochen Quante</i>	

Session 4: Code Similarity and Fault Localization

Mutation-Based Graph Inference for Fault Localization	97
<i>Vincenzo Musco, Martin Monperrus, and Philippe Preux</i>	
An Exploratory Study of Interface Redundancy in Code Repositories	107
<i>Adriano Carvalho de Paula, Eduardo Guerra, Cristina V. Lopes, Hitesh Sajani, and Otávio Augusto Lazzarini Lemos</i>	
Similarity of Source Code in the Presence of Pervasive Modifications	117
<i>Chaiyong Ragkhitwetsagul, Jens Krinke, and David Clark</i>	

Session 5: Software Testing

LLSPLAT: Improving Concolic Testing by Bounded Model Checking	127
<i>Min Gao, Lei He, Rupak Majumdar, and Zilong Wang</i>	
Are My Unit Tests in the Right Package?	137
<i>Gergő Balogh, Tamás Gergely, Árpád Beszédes, and Tibor Gyimóthy</i>	
Analysing and Comparing the Effectiveness of Mutation Testing Tools: A Manual Study	147
<i>Marinos Kintis, Mike Papadakis, Andreas Papadopoulos, Evangelos Valvis, and Nicos Malevris</i>	

Session 6: Code Transformation and Static Analysis

Survey of Approaches for Handling Static Analysis Alarms	157
<i>Tukaram Muske and Alexander Serebrenik</i>	
Effects Dependence Graph: A Key Data Concept for C Source-to-Source Compilers	167
<i>Nelson Lossing, Pierre Guillou, and Francois Irigoin</i>	
Transforming C++11 Code to C++03 to Support Legacy Compilation Environments	177
<i>Gábor Antal, Dávid Havas, István Siket, Árpád Beszédes, Rudolf Ferenc, and József Mihalicza</i>	

Session 7: Empirical Studies

A Case for Software Specific Natural Language Techniques	187
<i>David Binkley and Dawn Lawrie</i>	
A Source Level Empirical Study of Features and Their Interactions in Variable Software	197
<i>Stefan Fischer, Lukas Linsbauer, Roberto E. Lopez-Herrejon, and Alexander Egyed</i>	
Exploring the Effects of History Length and Age on Mining Software Change Impact	207
<i>Leon Moonen, Stefano Di Alesio, Thomas Rolfsnes, and Dave W. Binkley</i>	
Author Index	217