

2017 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM 2017)

**Toronto, Ontario, Canada
9-10 November 2017**



**IEEE Catalog Number: CFP17ENM-POD
ISBN: 978-1-5090-4040-7**

**Copyright © 2017 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:	CFP17ENM-POD
ISBN (Print-On-Demand):	978-1-5090-4040-7
ISBN (Online):	978-1-5090-4039-1

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2017 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement

ESEM 2017

Table of Contents

Message from General and Program	
Co-Chairs	xii
Organizing Committee	xiii

Session 1

Are One-Time Contributors Different? A Comparison to Core and Periphery Developers in FLOSS Repositories	1
<i>Amanda Lee and Jeffery C. Carver</i>	

Session 2A: Prediction/Estimation Models

Code Churn: A Neglected Metric in Effort-Aware Just-in-Time Defect Prediction	11
<i>Jinping Liu, Yuming Zhou, Yibiao Yang, Hongmin Lu, and Baowen Xu</i>	
Security Vulnerabilities in Categories of Clones and Non-Cloned Code: An Empirical Study	20
<i>Md Rakibul Islam, Minhaz F. Zibran, and Aayush Nagpal</i>	
Early Phase Cost Models for Agile Software Processes in the US DoD	30
<i>Wilson Rosa, Raymond Madachy, Bradford Clark, and Barry Boehm</i>	

Session 2B: Infrastructures

Automatic Building of Java Projects in Software Repositories: A Study on Feasibility and Challenges	38
<i>Foyzul Hassan, Shaikh Mostafa, Edmund S.L. Lam, and Xiaoyin Wang</i>	
Characterizing Developer Behavior in Cloud Based IDEs	48
<i>Yi Wang</i>	

Session 2C: Code Smells

An Empirical Examination of the Relationship between Code Smells and Merge Conflicts	58
<i>Iftekhhar Ahmed, Caius Brindescu, Umme Ayda Mannan, Carlos Jensen, and Anita Sarma</i>	
On the Influence of Human Factors for Identifying Code Smells: A Multi-Trial Empirical Study	68
<i>Rafael Maiani de Mello, Roberto Felicio Oliveira, and Alessandro Fabricio Garcia</i>	
What if I Had No Smells?	78
<i>Davide Falessi, Barbara Russo, and Kathleen Mullen</i>	

Session 3A: Testing

Introducing Automated GUI Testing and Observing Its Benefits: An Industrial Case Study in the Context of Law-Practice Management Software	N/A
<i>Vahid Garousi and Erdem Yildirim</i>	
Would You Like to Motivate Software Testers? Ask Them How	95
<i>Ronnie Edson de Souza Santos, Cleyton Vanut Cordeiro de Magalhães, Jorge da Silva Correia-Neto, Fabio Queda Bueno da Silva, Luiz Fernando Capretz, and Rodrigo Souza</i>	

Session 3B: Qualitative Research I

Characterizing Software Developers by Perceptions of Productivity	105
<i>André N. Meyer, Thomas Zimmermann, and Thomas Fritz</i>	
Beyond Continuous Delivery: An Empirical Investigation of Continuous Deployment Challenges	111
<i>Mojtaba Shahin, Muhammad Ali Babar, Mansooreh Zahedi, and Liming Zhu</i>	

Session 3C: Change/Issue Management I

Where Is the Road for Issue Reports Classification Based on Text Mining?	121
<i>Qiang Fan, Yue Yu, Gang Yin, Tao Wang, and Huaimin Wang</i>	
Predicting the Vector Impact of Change - An Industrial Case Study at Brightsquid	131
<i>Shaikh Jeeshan Kabeer, Maleknaz Nayebi, Guenther Ruhe, Chris Carlson, and Francis Chew</i>	
Managing Hidden Dependencies in OO Software: A Study Based on Open Source Projects	141
<i>Nemitari Ajenka, Andrea Capiluppi, and Steve Counsell</i>	

Session 4A: Tools/Frameworks

STRESS: A Semi-Automated, Fully Replicable Approach for Project Selection	151
<i>Davide Falessi, Wyatt Smith, and Alexander Serebrenik</i>	
Change-Aware Build Prediction Model for Stall Avoidance in Continuous Integration	157
<i>Foyzul Hassan and Xiaoyin Wang</i>	
Delta-Bench: Differential Benchmark for Static Analysis Security Testing Tools	163
<i>Ivan Pashchenko, Stanislav Dashevskiy, and Fabio Massacci</i>	
An Ontology-Based Approach to Automate Tagging of Software Artifacts	169
<i>Sultan S. Alqahtani and Juergen Rilling</i>	
REACT: An Approach for Capturing Rationale in Chat Messages	175
<i>Rana Alkadhi, Jan Ole Johanssen, Emitza Guzman, and Bernd Bruegge</i>	

Session 4B: Research Methods

Using a Visual Abstract as a Lens for Communicating and Promoting Design Science Research in Software Engineering	181
<i>Margaret-Anne Storey, Emelie Engstrom, Martin Höst, Per Runeson, and Elizabeth Bjarnason</i>	
Member Checking in Software Engineering Research: Lessons Learned from an Industrial Case Study	187
<i>Ronnie Edson de Souza Santos, Fabio Queda Bueno da Silva, and Cleyton Vanut Cordeiro de Magalhaes</i>	
Investigating the Use of a Hybrid Search Strategy for Systematic Reviews	193
<i>Erica Mourão, Marcos Kalinowski, Leonardo Murta, Emilia Mendes, and Claes Wohlin</i>	
Notifying and Involving Users in Experimentation: Ethical Perceptions of Software Practitioners	199
<i>Sezin Yaman, Fabian Fagerholm, Myriam Munezero, Hanna Mäenpää, and Tomi Männistö</i>	
Reporting Ethics Considerations in Software Engineering Publications	205
<i>Deepika Badampudi</i>	
Describing What Experimental Software Engineering Experts Do When They Design Their Experiments - A Qualitative Study	211
<i>Liliane Sheyla da Silva Fonseca, Carolyn Budinger Seaman, and Sergio Castelo Branco Soares</i>	

Session 4C: Human Factors

Analysis of the Understanding of the Concepts of Task and Skill Variety by Software Engineering Professionals	217
<i>Amirton Bezerra Chagas, Fábio Almeida Melo, Walter Felipe dos Santos, Adriana Almeida Nascimento de Oliveira, Sarita Monteiro Bora, and Fabio Queda Bueno da Silva</i>	
Understanding the Heterogeneity of Contributors in Bug Bounty Programs	223
<i>Hideaki Hata, Mingyu Guo, and M. Ali Babar</i>	
Autonomy in Software Engineering: A Preliminary Study on the Influence of Education Level and Professional Experience	229
<i>Léuson Mario Pedro da Silva, Alberto Trindade Tavares, Victor Afonso dos Santos Ferreira, Alex Juvencio Costa, Gabriel Ibson de Souza, Claudio Jose Antunes Salgueiro Magalhaes, and Fabio Bueno Queda da Silva</i>	
Team Maturity in Software Engineering Teams	235
<i>George Marsicano, Diana Valença Pereira, Fabio Q.B. da Silva, and César França</i>	
Towards an Approach to Prevent Social Loafing in Software Development Teams	241
<i>Ilenia Fronza and Xiaofeng Wang</i>	

Session 5

Multi-Objective Regression Test Selection in Practice: An Empirical Study in the Defence Software Industry	N/A
<i>Ramazan Özkan, Vahid Garousi, and Aysu Betin Can</i>	

Session 6A: Experiments

Estimating Energy Impact of Software Releases and Deployment Strategies: The KPMG Case Study	257
<i>Roberto Verdecchia, Giuseppe Procaccianti, Ivano Malavolta, Patricia Lago, and Joost Koedijk</i>	
Graphical vs. Tabular Notations for Risk Models: On the Role of Textual Labels and Complexity	267
<i>Katsiaryna Labunets, Fabio Massacci, and Alessandra Tedeschi</i>	
The Influence of Requirements in Software Model Development in an Industrial Environment	277
<i>Jorge Echeverría, Francisca Pérez, José Ignacio Panach, Carlos Cetina, and Óscar Pastor</i>	

Session 6B: Software Quality

An Industry Perspective to Comparing the SQALE and Quamoco Software Quality Models	287
<i>Clemente Izurieta, Isaac Griffith, and Chris Huvaere</i>	
Formative Evaluation of a Tool for Managing Software Quality	297
<i>Liliana Guzman, Anna Maria Vollmer, Marcus Ciolkowski, and Michael Gillmann</i>	
The Impact of Coverage on Bug Density in a Large Industrial Software Project	307
<i>Thomas Bach, Artur Andrzejak, Ralf Pannemans, and David Lo</i>	

Session 6C: Repository Analysis I

Quantifying the Transition from Python 2 to 3: An Empirical Study of Python Applications	314
<i>Brian A. Malloy and James F. Power</i>	
Which Version Should Be Released to App Store?	324
<i>Maleknaz Nayebi, Homayoon Farahi, and Guenther Ruhe</i>	
Mining Logs to Model the Use of a System	334
<i>Daniele Gadler, Michael Mairegger, Andrea Janes, and Barbara Russo</i>	

Session 7A: Defect Prediction

File-Level Defect Prediction: Unsupervised vs. Supervised Models	344
<i>Meng Yan, Yicheng Fang, David Lo, Xin Xia, and Xiaohong Zhang</i>	
Training Data Selection for Cross-Project Defection Prediction: Which Approach Is Better?	354
<i>Yi Bin, Kai Zhou, Hongmin Lu, Yuming Zhou, and Baowen Xu</i>	
The Significant Effects of Data Sampling Approaches on Software Defect Prioritization and Classification	364
<i>Kwabena Ebo Bennin, Jacky Keung, Akito Monden, Passakorn Phannachitta, and Solomon Mensah</i>	

Session 7B: Qualitative Research II

Eliciting Strategies for the GQM+Strategies Approach in IT Service Measurement Initiatives	374
<i>Bianca Trinkenreich, Gleison Santos, Monalessa Perini Barcellos, and Tayana Conte</i>	
Looking for Peace of Mind? Manage Your (Technical) Debt: An Exploratory Field Study	384
<i>Hadi Ghanbari, Terese Besker, Antonio Martini, and Jan Bosch</i>	

Characterizing Software Engineering Work with Personas Based on Knowledge Worker Actions	394
<i>Denae Ford, Tom Zimmermann, Christian Bird, and Nachiappan Nagappan</i>	

Session 7C: Change/Issue Management II

Common Bug-Fix Patterns: A Large-Scale Observational Study	404
<i>Eduardo Cunha Campos and Marcelo de Almeida Maia</i>	
Mining Version Control System for Automatically Generating Commit Comment	414
<i>Yuan Huang, Qiaoyang Zheng, Xiangping Chen, Yingfei Xiong, Zhiyong Liu, and Xiaonan Luo</i>	

Session 8A: Repository Analysis II

House of Cards: Code Smells in Open-Source C# Repositories	424
<i>Tushar Sharma, Marios Fragkoulis, and Diomidis Spinellis</i>	
How Does Machine Translated User Interface Affect User Experience? A Study on Android Apps	430
<i>Xue Qin, Smitha Holla, Liang Huang, Lymari Montijo, Dylan Aguirre, and Xiaoyin Wang</i>	
On Software Productivity Analysis with Propensity Score Matching	436
<i>Masateru Tsunoda and Sousuke Amasaki</i>	
An Exploratory Analysis of a Hybrid OSS Company's Forum in Search of Sales Leads	442
<i>Myriam Munezero, Tero Kojo, and Tomi Männistö</i>	

Session 8B: Requirements Engineering

What the Job Market Wants from Requirements Engineers? An Empirical Analysis of Online Job Ads from the Netherlands	448
<i>Maya Daneva, Chong Wang, and Patrick Hoener</i>	
Agile Quality Requirements Engineering Challenges: First Results from a Case Study	454
<i>Wasim Alsaqaf, Maya Daneva, and Roel Wieringa</i>	
Issues and Opportunities for Human Error-Based Requirements Inspections: An Exploratory Study	460
<i>Vaibhav Anu, Gursimran Walia, Wenhua Hu, Jeffrey C. Carver, and Gary Bradshaw</i>	
Assessing the Intuitiveness of Qualitative Contribution Relationships in Goal Models: An Exploratory Experiment	466
<i>Sotirios Liaskos, Alexis Ronse, and Mehrnaz Zhian</i>	

Session 8C: Poster Session

Identifying Software Decays: A System Usage Perspective	472
<i>Ashirul Mubin and Meng Kuai</i>	
An Empirical Study of Open Source Virtual Reality Software Projects	474
<i>Irving Rodriguez and Xiaoyin Wang</i>	
Beyond Boxes and Lines: Creating and Empirically Evaluating Alternative Visualizations for Requirements Conceptual Models	476
<i>Sotirios Liaskos, Teodora Dundjerovic, and Norah Alothman</i>	
A Comparison of Dictionary Building Methods for Sentiment Analysis in Software Engineering Text	478
<i>Md Rakibul Islam and Minhaz F. Zibran</i>	
Structured Synthesis Method: The Evidence Factory Tool	480
<i>Paulo Sérgio Medeiros dos Santos and Guilherme Horta Travassos</i>	
Author Index	482