

2017 IEEE Cybersecurity Development (SecDev 2017)

**Cambridge, Massachusetts, USA
24-26 September 2017**



**IEEE Catalog Number: CFP17H06-POD
ISBN: 978-1-5386-3468-4**

**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:	CFP17H06-POD
ISBN (Print-On-Demand):	978-1-5386-3468-4
ISBN (Online):	978-1-5386-3467-7

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

IEEE Secure Development Conference

SecDev 2017

Table of Contents

Message from the General Chair.....	viii
Message from the Program Chair.....	ix
Message from the Tutorial Chair.....	x
Conference Committees.....	xi
Panel: Building a Business around Secure Development.....	xiii
Keynotes.....	xv
Poster Listings.....	xviii

Tutorials

Hands-On Tutorial: Auditing Static Analysis Alerts Using a Lexicon & Rules	1
<i>Lori Flynn, David Svoboda, and William Snavelly</i>	
Automated Assessment Tools and the Software Assurance Marketplace (SWAMP)	3
<i>James A. Kupsch</i>	
Input Handling Done Right: Building Hardened Parsers Using Language-Theoretic Security	4
<i>Prashant Anantharaman, Michael C. Millian, Sergey Bratus, and Meredith L. Patterson</i>	
Java Deserialization Vulnerabilities and Mitigations	6
<i>Robert C. Seacord</i>	
Angr - The Next Generation of Binary Analysis	8
<i>Fish (Ruoyu) Wang and Yan Shoshitaishvili</i>	

Session 1: Helping Developers

A Machine Learning Approach to SDL	10
<i>Raghudeep Kannavara, Gilad Gressel, Damilare Fagbemi, and Richard Chow</i>	
Improving Attention to Security in Software Design with Analytics and Cognitive Techniques	16
<i>Jim Whitmore and William Tobin</i>	
Developers Need Support, Too: A Survey of Security Advice for Software Developers	22
<i>Yasemin Acar, Christian Stransky, Dominik Wermke, Charles Weir, Michelle L. Mazurek, and Sascha Fahl</i>	

Session 2: Preventing Vulnerabilities Systematically

A Software Solution for Hardware Vulnerabilities	27
<i>Komail Dharsee, Ethan Johnson, and John Criswell</i>	
ASLR: How Robust Is the Randomness?	34
<i>Jonathan Ganz and Sean Peisert</i>	
Layering Security at Global Control Points to Secure Unmodified Software	42
<i>Scott Ruoti, Kent Seamons, and Daniel Zappala</i>	
Empirical Studies on the Security and Usability Impact of Immutability	50
<i>Sam Weber, Michael Coblenz, Brad Myers, Jonathan Aldrich, and Joshua Sunshine</i>	

Session 3: Program Support to Improve Security

Securing Dataverse with an Adapted Command Design Pattern	54
<i>Gustavo Durand, Michael Bar-Sinai, and Mercè Crosas</i>	
Program Analysis of Cryptographic Implementations for Security	61
<i>Sazzadur Rahaman and Danfeng (Daphne) Yao</i>	
FaCT: A Flexible, Constant-Time Programming Language	69
<i>Sunjay Cauligi, Gary Soeller, Fraser Brown, Brian Johannismeyer, Yunlu Huang, Ranjit Jhala, and Deian Stefan</i>	
Something Is Better Than Everything: A Distributed Approach to Audit Log Anomaly Detection	77
<i>Isis Rose, Nicholas Felts, Alexander George, Emily Miller, and Max Planck</i>	

Posters

Evaluation of Software Vulnerabilities in Vehicle Electronic Control Units	83
<i>Jesse Edwards, Ameer Kashani, and Gopalakrishnan Iyer</i>	
Creating Abuse Cases Based on Attack Patterns: A User Study	85
<i>Imano Williams and Xiaohong Yuan</i>	
Author Index	87