Andrei Dan

contact@andreidan.net

PROFILE

I am a scientist in Internet of Things Systems & Software at Hitachi ABB Power Grids. Previously, I developed reliable and secure of industrial software solutions and machine learning applications at ABB Corporate Research. During my PhD studies at ETH Zurich, I worked on static code analysis for software correctness and security.

WORK EXPERIENCE

Scientist in Internet of Things Systems & Software 2020 -
Hitachi ABB Power Grids Research, Baden-Dättwil

Scientist in Software Security 2018 - 2020
ABB Corporate Research Center, Baden-Dättwil
- IoT project on connecting devices to distributed ledgers for industrial applications
- Improved security and privacy of applications using computation on encrypted data
- Evaluated and improved robustness of machine learning for industrial use cases
- Innovation project on easy robot programming using artificial intelligence

Research Intern 2016
Samsung Research America, Mountain View, USA
- Proved that computing a Context-Free Language minimal cut is NP-hard
- Implemented a fix-location finder for a null-pointer analysis of Java programs

Research Intern 2011 - 2012
IBM Research, Rüschlikon
- Implemented in C a Linux device driver for solid-state hybrid storage systems
- Explored trade-offs between performance and durability of the devices

Research Intern 2010
SRI International, Menlo Park, USA
- Developed using the PVS proof system a verified SAT trace checker
- Increased the confidence in the results of highly-optimized SAT solvers

EDUCATION

Ph.D. Computer Science 2012 - 2018
Software Reliability Lab, ETH Zurich
- Thesis advisor: Prof. Martin Vechev
- Developed new static program analysis for concurrent programs running on multi-core processors or high performance networks, part of the Fender project
- Developed part of the Securify analyzer for the security of Ethereum smart contracts

M.Sc Computer Science 2010 - 2012
Ecole Polytechnique Federale de Lausanne
- Fast-track Master program in Computer Science consisting of 90 ECTS credits

Engineer Diploma 2008 - 2010
Ecole Polytechnique Paris, France
- Multidisciplinary scientific education, formal methods for software reliability

B.Sc. Computer Science 2005 - 2009
Polytechnic University of Bucharest, Romania
- Final Project: Designed and implemented a GPS Navigator in Java

PAPERS

Synthesizing False Positive Adversarial Objects Using Generative Models
M. Kotuliak, S.E. Schoenborn, A. Dan
Submitted

Fast and Effective Robustness Certification for Recurrent Neural Networks
W. Ryou, J. Chen, M. Balunovic, G. Singh, A. Dan, M. Vechev
Submitted

Securify: Practical Security Analysis of Smart Contracts
P. Tsankov, A. Dan, D. Drachsler-Cohen, A. Gervais, F. Bunzli, M. Vechev
CCS 2018

Automatic Verification of RMA Programs via Abstraction Extrapolation
C. Baumann, A. Dan, Y. Meshman, T. Hoefler, M. Vechev
VMCAI 2018

Finding Fix Locations for CFL-Reachability Analyses via Minimum Cuts
A. Dan, M. Sridharan, S. Chandra, JB Jeannin, M. Vechev
CAV 2017

Modeling and Analysis of Remote Memory Access Programming
A. Dan, P. Lam, T. Hoefler, M. Vechev
OOPSLA 2016

Effective Abstractions for Verification under Relaxed Memory Models
A. Dan, Y. Meshman, M. Vechev, E. Yahav
VMCAI 2015

Synthesis of Memory Fences via Refinement Propagation
Y. Meshman, A. Dan, M. Vechev, E. Yahav
SAS 2014

Predicate Abstraction for Relaxed Memory Models
A. Dan, Y. Meshman, M. Vechev, E. Yahav
SAS 2013

AWARDS

Distinguished Paper Award at OOPSLA	2016
ACM SIGPLAN Travel Grant for OOPSLA	2016
EPF Lausanne Excellence Scholarship	2010 - 2012
Eiffel Excellence Scholarship (French Ministry of Foreign Affairs)	2008 - 2010

TEACHING ASSISTANT

Program Analysis 2013 - 2015
Graduate Course

Software Architecture and Engineering 2014 - 2018
Undergraduate Course

SERVICE

External Review Committee Member
ASPLOS 2020

Program Committee Member
EASE 2019