Pardis Pashakhanloo

ppashakhanloo@gmail.com, pardisp.github.io

Education

Ph.D. in Computer and Information Science *2017–2022*
University of Pennsylvania; advised by Mayur Naik.
Dissertation: Integrating Declarative Static Analysis with Neural Models of Code
Select Coursework: Software Analysis and Testing, Software Foundations, Machine Learning, Advanced Databases, Theory of Computation.

B.Sc. in Software Engineering *2012–2017*
Sharif University of Technology
Select Coursework: Programming Language Design, Compiler Design, System Analysis and Design, Object-oriented Programming and Design, Software Engineering.

Work Experience

Senior Software Engineer at CertiK (Feb. 2023 – present)
Created and deployed Solidity vulnerability detection tools using static analysis.
Engineered an AI-based vulnerability detection framework for Solidity from inception to deployment.
Mentored a summer intern exploring GPT-3.5 potentials and limitations for code property extraction.
Research Internship at Microsoft (Summer 2019)
Extended the CheckedC compiler to verify bounds declarations using static analysis.
Mentor: David Tarditi

Research Internship at Microsoft (Summer 2020)
Investigated false positives and their causes in concurrency bug detection as part of the Torch Project.
Mentors: Suman Nath, Shuvendu Lahiri

Research

CodeTrek: Flexible Modeling of Code using an Extensible Relational Representation
Pardis Pashakhanloo, Aaditya Naik, Yuepeng Wang, Hanjun Dai, Petros Maniatis, Mayur Naik
International Conference on Learning Representations (**ICLR'22**)

Learning to Walk over Relational Graphs of Source Code
Pardis Pashakhanloo, Aaditya Naik, Yuepeng Wang, Hanjun Dai, Petros Maniatis, Mayur Naik
Deep Learning For Code Workshop (**DL4C@ICLR'22**)

PacJam: Securing Dependencies Continuously via Package-Oriented Debloating
Pardis Pashakhanloo, Aravind Machiry, Hyon Choi, Anthony Canino, K. Heo, Insup Lee, Mayur Naik
ACM ASIA Conference on Computer and Communications Security (**AsiaCCS'22**)

Effective Program Debloating via Reinforcement Learning
Kihong Heo, Woosuk Lee, **Pardis Pashakhanloo**, Mayur Naik
ACM Conference on Computer and Communications Security (**CCS'18**)

Making Break-ups Less Painful: Source-level Support for Transforming Legacy Software into a Network of Tasks
Nik Sultana, Achala Rao, Zihao Jin, **Pardis Pashakhanloo**, Henry Zhu, Ke Zhong, Boon Thau Loo
Workshop on Forming an Ecosystem Around Software Transformation (**FEAST@CCS'18**)

Hashtray: Turning the tables on Scalable Client Classification
Nik Sultana, **Pardis Pashakhanloo**, Zihao Jin, Achala Rao, Boon Thau Loo
IFIP/IEEE Symposium on Integrated Network and Service Management (**IM'19**)

Trace-based Behaviour Analysis of Network Servers
Nik Sultana, Achala Rao, Zihao Jin, **Pardis Pashakhanloo,** H. Zhu, V. Yegneswaran, Boon Thau Loo
15th International Conference on Network and Service Management (**CNSM'19**)

Teaching Experience

Course Development Assistant at University of Pennsylvania (Summer 2020)
Supervisor: Mayur Naik
Assisted in developing lab assignments and lectures for CIS-547 (Program Analysis)

POPL'20 Tutorial: Building Program Reasoning Tools using LLVM and Z3 (Spring 2020)
Introduced LLVM and Z3's architecture and conducted hands-on exercises in this tutorial.

Teaching Assistant
Web 3.0 Security (2022)
Program Analysis (2020–2022), Software Engineering Lab (2017),
Numerical Methods (2015–2016), Compiler Design (2015–2016),
Fundamentals of Programming (2013–2014)

Select Projects

CodeTrek (2020–2022)
Deep learning approach which represents codebases as relational databases and robustly embeds programs using guided walks.
PacJam (2019–2020)
Package-oriented debloating framework for adaptive and security-aware management of an application's dependent packages.
Chisel (2018–2019)
Automated tool for debloating and customization of C programs on top of LLVM; powered by reinforcement learning.
DoStbin (2017–2018)
Data model for describing experiments involving denial-of-service attacks.

Tech Skills

Languages: Python, C/C++, Java, and SQL; familiar with Coq, Solidity, MATLAB, and JavaScript.

Technologies: Google Cloud Platform; AWS; LLVM/Clang, Slither, CodeQL, PyTorch; git, unix-based OS; familiar with Apache server and NGINX; familiar with MLPack, Django, and NodeJS.

Awards

Computing Research Association Woman Graduate Cohort **Scholarship** *Jan. 2018, 2020*
National Elites Foundation Scholarship for Outstanding Academic Success *Feb. 2014*