

Parnian Shabani Kamran

Electrical and Computer Engineering Department, University of California, Davis, CA, 95616

🌐 <https://parniaan.github.io> ✉ pkamran@ucdavis.edu 🌐 <https://github.com/Parniaan>

RESEARCH INTERESTS

Development of safe and reliable systems using static and dynamic analysis, and fuzz testing, Implementation of trustworthiness AI-powered programming tools and code language models using formal methods, prompting and reasoning techniques, Study, analysis and measurement of open source supply chain security threats and Rust supply chain security

SKILLS

Programming: Rust, Python, Dafny, C++11, JavaScript
Libraries: Hypothesis, Pandas, NumPy, PyTorch, OpenCV, LangChain
Software & Tools: **Theorem Prover:** Z3
Parallel Programming: OpenCilk
Performance Analyzer: Intel VTune, AMD uProf, Perf
Machine Learning: WEKA

EDUCATION

Ph.D. Computer Engineering 2021 - 2027
Department of Electrical and Computer Engineering, University of California, Davis
Current Research: Improving Large Language Models (LLMs) trustworthiness in code-related tasks using formal verification and latest prompting and reasoning techniques including Chain of Thought (COT), using LLM agents and external knowledge with Retrieval-Augmented Generation (RAG)
Supervisor: Caleb Stanford

M.Sc. Computer Engineering 2014 - 2016
Department of Computer Engineering, Tehran Polytechnic, Tehran, Iran
Thesis: Design and development of a process-variation resilient aging sensor for detecting hardware aging in the presence of process verification
Supervisor: Hamid R. Zarandi

B.Sc. Computer Engineering 2008 - 2013
Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan, Iran
Thesis: Development of an Android application for currency recognitions for visually-impaired people

RESEARCH PUBLICATIONS

Parnian Kamran, Premkumar Devanbu, and Caleb Stanford. 2024. **Vision Paper: Proof-Carrying Code Completions**. In 39th IEEE/ACM International Conference on Automated Software Engineering Workshops (ASEW '24), October 27-November 1, 2024, Sacramento, CA, USA.
<https://doi.org/10.1145/3691621.3694932>

A. A. Zeraatkar, **P. S. Kamran**, I. Kaur, N. Ramu, T. Sheaves and H. Al-Asaad, **On the Performance of Malware Detection Classifiers Using Hardware Performance Counters**, 2024 International Conference on Smart Applications, Communications and Networking (SmartNets), Harrisonburg, VA, USA, 2024, pp. 1-6, doi: 10.1109/SmartNets61466.2024.10577644.

A. A. Zeraatkar, **P. S. Kamran** and H. Al-Asaad, **Advancements in Secure Computing: Exploring Automated Repair Debugging and Verification Techniques for Hardware Design**, 2024 IEEE 14th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV, USA, 2024, pp. 0357-0364, doi: 10.1109/CCWC60891.2024.10427806.

WORK EXPERIENCE

Software Engineer, Snapptrip, Tehran, Iran

2017 - 2020

- Developed responsive user interfaces for fulfillment workflows, including cancellations, order tracking and administrative dashboards, using modern JavaScript frameworks such as React and AngularJS with real-time data synchronization features utilizing WebSockets and REST API integrations.
- Integration of visual data representation tools within the administrative dashboards to assist administrators in tracking bookings and cancellations and exporting reports in PDF and CSV formats to improve revenue analysis by the finance department, increasing booking fulfillment rates by 87% during peak periods.
- Implemented data management features, such as filtering and sorting by booking status, customer, date, and location, to facilitate the handling of large amounts of data by the data analysis team

Intern in Huawei LTE Network Optimization Team, Tehran, Iran

2016 - 2017

- Automated monitoring and tracking of network failures using Python, macros, and shell scripting
- Visualization of network failure trends and performance KPIs to measure network failure and reduce the downtime

ACADEMIC SERVICES

- Session chair for ASE

October 2024

- Reviewer for IEEE Access

Summer 2024

- Committee Member of FPGA Hackathon, Tehran Polytechnic (Amirkabir University), Tehran, Iran

Fall 2015

VOLUNTEER EXPERIENCE

- Student volunteer for ASE

October 2024