Parnian Shabani Kamran

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RESEARCH INTERESTS

Trustworthiness of AI-based Programming Tools: Trustworthy Large Language Models (**LLMs**) for code-related tasks using **formal methods** and source code vulnerability detection

Supply Chain Security: Open source supply chain threats detection using **static** and **dynamic analysis** and **fuzzing**

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

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 (A local platform for accommodation and travel bookings) *Nov 2017 - Dec 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, Huawei LTE Network Optimization Team *July 2016 - Oct 2017*

- Automated monitoring and tracking of network failures using Python, macros, and shell scripting, reducing performance KPI monitoring time by 14 hours/week
- Visualized network failure trends and performance KPIs to monitor network issues, leading to the responsibility for TDD LTE daily network reporting

EDUCATION

Ph.D. Computer Engineering *September 2021 - Till date*

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

Expertise: Natural Language Processing, Source code Analysis, Programming Languages, Formal Methods, Vulnerability Analysis, Machine learning

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 *September 2014 - 2016*

Department of Computer Engineering, Amirkabir University of Technology

Thesis: Design and development of a process-variation resilient aging sensor for detecting hardware aging in the presence of process verification

B.Sc. Computer Engineering *September 2008 - 2013*

Department of Electrical and Computer Engineering, Isfahan University of Technology

Thesis: Development of an Android application for currency recognitions for visually-impaired people

ACADEMIC SERVICES

Session chair	Automated Software Engineering (**ASE**) - 2024
Reviewer	**IEEE Access** - 2024
Committee Member	**FPGA Hackathon** - 2015

VOLUNTEER EXPERIENCE

- Student volunteer for Automated Software Engineering (**ASE**) *Oct 2024*
- Onboarded and trained 5 new hired members within a three-month period, Huawei *Oct 2016*