Parnian Shabani Kamran

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SUMMARY

Research Assistant at the University of California, Davis, specializing in programming languages and machine learning. Focused on advancing the trustworthiness of large language models (LLMs) in code-related tasks and program verification.

SKILLS

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

RESEARCH & WORK EXPERIENCE

Research Assistant, Computer Science Department, University of California, Davis *September 2021 - Present*

- **Designed and implemented a prototype for proof-carrying code completion PC^3 in the program verification language Dafny**, focusing on file system vulnerabilities using prompting and reasoning techniques including Chain of Thought (COT), using AI agents and external knowledge with Retrieval-Augmented Generation (RAG), published in the Workshop on Automated and verifiable Software sYstem DEvelopment, September 2024
- **End-to-end classification pipelines for malware detection**—incorporating 18 binary classifiers and two ensemble machine learning methods to spot malicious application patterns by applying effective EDA technique to reduce the features dimentionality up to 50% without sacrificing the performance, published in the Smart Applications, Communications and Networking Conference, April 2024
- **Predicting the reproducibility of sotware artifacts**—Implemented Random Forest, Logistic Regression, and Synthetic Minority Oversampling Technique to predict build reproducibility across 3,722 Bugswarm artifacts, achieving 93% precision and recall of 94% for reproducible builds
- **Optimized OSSGadget's typosquatting detection for npm and pypi packages** with added/removed prefixes and suffixes, boosting identification accuracy by 38.6% through the adaptation of Typomind's heuristic rules in C#, slashing false positives and fortifying open-source supply-chain security

Software Engineer, Snapptrip (A local platform for accommodation and travel bookings) *Nov 2017 - Dec 2020*

- Developed responsive user interfaces for fulfillment workflows, and administrative dashboards, using React and AngularJS, WebSockets and REST API integrations
- Achieved promotion to senior Front-End Developer in under two years in a fulfillment team as the sole front-end engineer (where other teams had at least two), collaborating directly with the team lead to define and prioritize the front-end roadmap.

LTE Network Optimization Engineer, Huawei *July 2016 - Oct 2017*

- Identified and visualized TDD LTE network failure trends and performance KPIs, cutting daily report preparation time by 75%, accelerating issue detection and resolution.
- Onboarded 5 new engineers (50% of team hires) and accelerated their average ramp-up time up to 25%.

EDUCATION

M.Sc. Computer Science, *University of California, Davis* (GPA: 3.84/4) *September 2023 - Present*

M.Sc. Computer Engineering, *Amirkabir University of Technology* *September 2014 - 2016*

B.Sc. Computer Engineering, *Isfahan University of Technology* *September 2008 - 2013*

Relevant Coursework: Machine Learning, Design and Analysis of Algorithms, Programming Languages