

Rohith PRAKASH

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RESEARCH INTERESTS

Security & Privacy	Differential privacy; contention and covert side channels; inference attacks; machine learning; OS and systems level defenses
Computer Arch.	Memory and cache systems; hardware modifications for private queues
Current Research	Resource-agnostic side channel defense: apply differential privacy to generative models of program execution to obfuscate payloads

EDUCATION

CURRENT	Masters + PhD in COMPUTER ENGINEERING, University of Texas , Austin Research Topics: Secure memory controllers, machine learning and privacy algorithms for time series data, optimization algorithms. Advisor: Prof. Mohit TIWARI GPA: 3.7
MAY 2014	Bachelor of Science in COMPUTER ENGINEERING, University of Texas , Austin Topic: COMPUTER ARCHITECTURE Senior Project: "TEX86: A FAST Simulator for Processor Design Architects" Advisor: Prof. Derek CHIOU GPA: 3.7
MAY 2014	Bachelor of Science in MATHEMATICS, University of Texas , Austin Topic: PURE MATHEMATICS GPA: 3.5

WORK EXPERIENCE

JAN 2015— <i>Current</i>	Graduate Research Assistant UT AUSTIN Intelligent characterization and optimization of attacker models for side-channel security attacks using machine learning and optimization techniques. Use Markov, stochastic, wavelet, and other methods in conjunction with dimensionality reduction on the resulting time-series to demonstrate potential information leakage. Design of memory controller for obfuscation of memory traces using differential privacy. Model memory patterns of program workloads and obfuscate the resulting memory traces with the Laplacian differential privacy method. Thwarting queue contention channels with differential privacy. Creation of a generic queue architectural structure which can be tuned to give variable privacy guarantees with speed trade-offs. Reduction of network side channel leakage over SSL/TLS connections by modifying hardware encryption module for network I/O. Apply differential privacy in hardware to models created from common network traffic, reducing adversaries' abilities to glean private information.
MAY 2015— AUG 2015	Security Research Intern ALTERA CORP Researched, tested, and analyzed various hardware and algorithmic implementations for physical-unclonable functions (PUFs). Given actual SRAM cells for use in prototype PUFs, analyzed temperature, current, and other data to create algorithms for determining PUF reliability, resilience, enrollment procedures, and bit selection.

AUG 2014– DEC 2014	Graduate Teaching Assistant UT AUSTIN Teaching assistant for sophomore undergraduate C/C++ class (EE 312: Software Design and Implementation I). Basic problem solving, design and implementation techniques for imperative programming; structured programming in the C/C++ language; programming idioms; introduction to software design principles, including modularity, coupling and cohesion; introduction to software engineering tools; elementary data structures; asymptotic analysis.
JUN 2014– MAY 2015	Graduate Technical Intern INTEL CORP Tested, verified, and debugged camera unit memory interface systems. Compiled models, ran regressions, and debugged synthesized Verilog for Intel Atom processors.
FEB 2014– Aug 2014	Tutor Level II TUTOR.COM Tutored high-school and college-level students in Geometry, Algebra, Calculus I, II, III, Discrete Math, Computer Science, and Linear Algebra. Helped students complete homework, study for tests, and learn concepts through the online Tutor.com classroom application via a virtual whiteboard with text and voice features.
FEB 2012– Aug 2013	Undergraduate Technical Intern INTEL CORP Worked on gate-level simulation (GLS) for the Intel Atom processor. Compiled models, ran regressions, and debugged synthesized Verilog. Created and maintained validation automation tool (written in C, Perl and Tcl/Tk) which allowed validation engineers to automatically build and fix common build errors quickly.

COMPUTER SKILLS

PROFICIENT LANGUAGES: C/C++, x86 ISA, Julia, Python, ARM ISA, Java, and more
 OPERATING SYSTEMS: Linux/Unix/Unix-based, Windows

SCHOLARSHIPS AND AWARDS

2014–CURRENT Graduate Research and Tuition Grant
 AUG 2010–2014 Engineering Undergraduate Honors
 2012, 2014, 2015 Intel Individual Contributor Award
 2015 UTexas Hackathon - Dell Innovation Award

INTERESTS AND OTHER

LANGUAGES: English, French
 NON-ACADEMIC: Cooking, tennis, running, reading
 CITIZENSHIP: US Citizen