ALEXANDER KISIL

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EXPERIENCE

Director, Senior Computer Engineer Apr 2022 – Present
Agita Labs Remote

- Direct and mentor a team of three engineers in the development of TrustForge, Agita Labs' secure hardware enclave
- Design and iterate on TrustForge SDK and SW emulator to allow clients to trial our tech without needing HW access
- Maintain and document a 50,000+ line codebase (C++, SystemVerilog, Assembly, Node.js, Python) in AWS and Azure
- Present our ideas, technical specs, and challenges to investors and potential customers to help secure over $4mil in funding
- Implement performance-critical C++ interfaces between HW and native SW libraries to enable practical adoption

Computer Engineer Jan 2019 – Apr 2022
Agita Labs Ann Arbor, MI

- Designed and built TrustForge, an FPGA-powered secure hardware enclave, custom ISA and SW programming framework
- Built hardware performance monitor and ciphertext cache to identify and reduce >70% of our latency at FPGA interfaces
- Created hardware-accelerated encryption and data integrity modules, achieving secure computation without performance compromise
- Architect and build novel data hashing, IEEE754 floating point, and exception handling approaches under extreme bit-granularity memory constraints leveraging open source library HardFloat

Software Engineering Intern May 2018 – Aug 2018
Qualcomm San Diego, CA

- Implemented OpenVX/OpenCV corollary library to enable efficient data flow between the Computer Vision and VR teams
- Optimized legacy computer vision functions for a 2.5x average speedup to meet Qualcomm's new VR chips' specs

Undergraduate Research Assistant Dec 2017 – May 2018
University of Michigan (Computer Security Lab) Ann Arbor, MI

- Assessed security profile of novel encryption accelerators via side-channel analysis to identify vulnerabilities before tape-out
- Programmed data tagging for the RocketChip open-source processor to allow for finer-grained encryption

Student Instructor for EECS 280 (Programming and Data Structures) Dec 2016 – Dec 2017
University of Michigan Ann Arbor, MI

- Instructed labs on OOP, performed code review in office hours, and designed and tested exam problems for 1000+ students
- Implemented cheat-checking SW to analyze students' C++ code to provide a fair and opportunistic learning environment

TECHNICAL SKILLS

Languages: C/C++, C#, SystemVerilog, Python, Javascript, gdscript, Assembly (ARM, RISC-V), Bash
Tools: Git, Make, Jenkins, Vivado, Jira, Confluence, AWS, Azure, Microsoft VS & Office, Godot, Unity, Unreal, Claude/GPT

PUBLICATIONS & PATENTS

- *Morpheus II: A RISC-V Security Extension for Protecting Vulnerable Software and Hardware, 2021 IEEE HotChips 33*
- *Patent US11748521: Privacy-Enhanced Computation via Sequestered Encryption*
- *Patent US12105855: Safe Disclosures in Sequestered Encryption Systems*

PROJECTS

***Project Lilypad*, Video Game by Yellofinch Games (Godot)** Jun 2023 – present

- Design, architect and implement a 2D roguelite game using industry-standard design patterns in Godot with a partner
- Manage game scope through a game design document, setting deliverable goals aligned with our rapid-iteration philosophy

***Io*, *Dreamwillow*, Video Game by WolverineSoft Studio (Unity, C#)** Sep 2019 – May 2020

- Provided direction and feedback across 30+ members of different disciplines to ensure concept art, music, and gameplay all maintained the vision and tone of the game
- Managed content and scope, strategizing tradeoffs to deliver a polished product for a showcase of over 1200 attendees

EDUCATION

UNIVERSITY OF MICHIGAN COLLEGE OF ENGINEERING ***2015 - 2018***
B.S.E. Computer Engineering, cum laude