

Sahil Jaganmohan

Systems Software Engineer

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Education

Purdue University, West Lafayette, IN

December 2022, GPA: 3.90

Master of Science, Computer Engineering

Specialization: Operating Systems & Embedded Systems

Courses: Computer Architecture, Applied Algorithms, Programming Parallel Machines, Applied Quantum Computing

Purdue University, West Lafayette, IN

December 2021, GPA: 3.90

Bachelor of Science, Computer Engineering

Graduated w/ Distinction.

Professional Experience

Apple Inc. – Cupertino, CA

Embedded Software Engineer – Silicon Engineering Group

Jan 2023 – Present

- Directed the design and development of an embedded application which **dynamically predicts latencies** of critical HW IP blocks in real-time, detecting **bandwidth starvation, surges, and idling**. Enabled for critical workflows, providing detailed HW insights and potential optimizations on **data access, caching patterns and bandwidth bottlenecks**.
- Resulted in a **15% reduction in cache thrashing** for key end-user use-cases. Analyzed and mitigated various **bandwidth bottlenecks by 20%** across product lines through software prefetching algorithms and proposed hardware design changes.
- Designed and implemented a **live on-device dashboard**, broadcasting performance metrics on multiple HW IPs simultaneously. Allowed for a **comprehensive view and replay capabilities** for SoC debugs.
- Spearheaded the **HW bring-up** of multiple IPs across a range of SoCs as the Organization's Subject Matter Expert. Collaborated and iterated with **hardware architecture & CoreOS** for production use-cases.
- Led the team in architecting and accelerating a **custom large-scale data engineering platform**. Achieved a **5x boost in performance** and visualization speeds while **reducing memory usage by 93%**. Deployed **distributed caching schemes** and **parallel data processing** for additional performance gains. Platform speeds and memory profiling surpassed Apache Spark for many of the department's use-cases.
- Technologies: C/C++, RTOS, ARM, Python, Rust, Distributed System Design.

Embedded Software Engineer Intern – Silicon Engineering Group

May 2022 – Aug 2022

- Engineered embedded solutions to analyze performance on SoCs. Enhanced operational efficiency and introduced innovative metrics.
- Elevated infrastructure capabilities and built solutions for large-scale performance analytics across more than 1000 FPGA and silicon boards.

L3Harris – Melbourne, FL

Embedded Software Engineer Intern – Space and Airborne Systems

May 2021 – Aug 2021

- Proposed and architected optimized embedded solutions on an **ARM** controller for future products, focusing on system performance.
- Integrated enhancements on custom **FPGA** hardware with an **MCU**, delivered a **400% increase in performance efficiency**.
- US Title-18 In-depth details confidential. || Technologies used: C/C++.

AT&T – Seattle, WA

Software Engineer Intern – AMP ML

May 2020 – Aug 2020

- Applied **predictive analysis** and **machine learning** models to classify users under personas to improve “relevancy” for search results.
- Built an **NLP model** to identify abstract “topics” from searches. Improved search result relevance and **user classification** by 25%.

CME Group – Chicago, IL

Software Engineer Intern – Trade Execution Systems

May 2020 – Aug 2020

- Designed and implemented fault tolerance across Market Segment Gateways (MSGW) on the GLOBEX Order Entry System.
- Implemented a **dynamic state sync** across connected distributed systems, client systems, **order entry systems**, and matching engines.
- Won 3rd place at CodeUp – Developed a live **derivative trading algorithm** executed against a variety of **high-volume futures markets**.

Leadership Experience

Purdue University – West Lafayette, IN

Jan 2019 – Dec 2022

ECE Graduate Teaching Assistant

- Supervised 12 UTAs, taught weekly auxiliary recitations, planned course materials and assignments.
- Head GTA for Data Structures & Algorithms; GTA for Operating Systems; TA for Advanced C Programming.

Purdue BGR – West Lafayette, IN

Aug 2019 – Aug 2021

Team Supervisor

- Managed 15 orientation leaders to support a transition of 9,000 incoming students, handled logistics and scheduling for large campus events.
- Fostered an inclusive work environment centered around interpersonal skills, through mentorship and directed group discussions.

Projects

MapReduce

Nov 2022 – Dec 2022

- Implemented a full-scale Map-Reduce keyword lookup algorithm designed to run across multi-core machines using OpenMP and OpenMPI.

Skills

|| **Languages:** C/C++, Python, Java, Rust, Golang, Swift || **Embedded Systems:** RTOS, I2C, DMA, SPI, UART, GPIO, NVIDIA-CUDA ||

|| **Hardware:** SystemVerilog, ASIC Design, PCB, RTL, ARM, FPGA || **Cloud/Containerization:** AWS-EC2, Docker, Kubernetes ||