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EXPERIENCE

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• **Tesla Autopilot**

Palo Alto, CA

*Software Engineer, AI Platforms - Cameras**Jan 2024 – Present*

- **Camera Infrastructure:** Working on low latency, real time, high performance embedded software to ingest and process high frame rate camera data onboard Tesla vehicles and humanoid robots. Shipped several features to increase the performance and reliability of our **C++20** camera software stack. Occasionally presented some projects to Elon, including:
  - \* Reducing initialization time of cameras by **10%** through parallelization.
  - \* Increasing SLAM performance by **5%** by synchronizing cameras through a cross-SoC distributed system.
  - \* Creating a fully compile-time library to calculate tight upper bounds of camera code memory usage.
  - \* Systematically finding and reducing unnecessary camera memory consumption by **25%**.
  - \* Reducing camera processing latency by **85%** by optimizing ISP and GPU usage in the image capture to vision pipeline
- **Camera Software Redundancy:** Designed and implemented a distributed system to allow camera software to be operated redundantly across multiple SoCs while maintaining high availability and consistent state. Allowed camera feeds to be available even during critical software failures, allowing for better user experience and safety. Primarily working with **C++20**
- **Camera Image Signal Processing:** Working on optimizing and tuning Tesla's custom Image Signal Processor (ISP) code. Improved the performance of Tesla's autoexposure algorithm on multiple vehicle and robot types, increasing image quality and fidelity in low light and high movement scenarios. Primarily working with **C++20**.
- **Driver Monitor:** Working on adding various features to Tesla's driver monitoring system. Added features and infrastructure to dynamically determine monitoring sensitivity based on the current external environment. Primarily working with **C++20**.

• **Nuro**

Mountain View, CA

*Software Engineer**Jan 2022 – Jan 2024*

- **Nuro:** Nuro is a autonomous delivery vehicle startup focusing on last mile autonomy. They have raised over \$2B from Greylock, Google, Fidelity, and others.
- **Safety Systems:** Maintained and wrote new features for our onboard safety management systems. Shipped several onboard features, such as dynamic issue severity escalation, static analysis checks, and increased system configurability. Primarily coding in **C++17/20**.
- **Real Time Automatic Issue Recommendations:** Designed and created an offboard service that consumes real time diagnostic information from Nuro's vehicle fleet and outputs actionable steps to mitigate issues. Implemented the entire backend in **Python** and drove product development efforts for the user interface, testing, and metrics collection. This project resulted in a **30% increase** in overall operational efficiency by allowing operators to resolve issues faster.
- **Career Growth:** Received a promotion from **L3 → L4 in 1 year**, on track for L5 (senior) before leaving.

• **Optiver**

Chicago, IL

*Software Engineering Intern**Jun 2021 – Aug 2021*

- **Automated Trading Systems:** Optiver is a leading high frequency trading firm. Worked on various projects related to **high performance, low latency C** code and strategy implementation on the options market making team.
- **Career Growth:** Received a full time return offer.

• **University of Virginia**

Charlottesville, VA

*Undergraduate Teaching Assistant**Feb 2021 – Dec 2021*

- **CS 4414 - Operating Systems:** Held biweekly office hours to help students understand OS concepts such as caching and memory management, virtual memory, threading and synchronization, file systems, shells, and the POSIX API.
- **CS 2150 - Program and Data Representation:** Conducted lab sessions and office hours for over 250 students. Helped students understand the implementation and usage of fundamental data structures, **C++**, **x86 assembly**, **machine code**, and other fundamental systems programming concepts.

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EDUCATION

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• **University of Virginia**

Charlottesville, VA

*GPA: 3.98/4.00 - Bachelor of Science in Computer Science**Aug 2018 – Dec 2021*• **Thomas Jefferson High School for Science and Technology**

Alexandria, VA

*GPA: 4.33/4.0**Sep 2014 – Jun 2018*

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PROGRAMMING SKILLS

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- **Languages:** C++{20, 17, 14, 11}, Python, C
- **Technologies and Skills:** Operating Systems, Computer Architecture, CPU Perf Optimization, Embedded Systems, Distributed Systems, Multithreaded Programming