

Sagar Patil

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Education

Purdue University / *B.Sc. in Computer Science / Expected May 2025 / West Lafayette, IN*

Coursework: Compilers, Operating Systems, Computer Networks, Computer Security, Analysis of Algorithms, Data Mining and Machine Learning, Artificial Intelligence

Work Experience

Tesla, Inc. / *Software Engineer, Autopilot Hardware (Intern) / Fall 2024 / Palo Alto, CA*

- Performed software development tasks on the Autopilot hardware post-silicon validation team
- Tasks include test infrastructure for autopilot hardware, debugging kernel & firmware, etc.

Asylon Robotics / *Software Engineer (Intern) / Summer 2024 / Philadelphia, PA*

- Ported BitBake (Yocto) recipes developed for Jetson to Raspberry Pi, with A/B booting (U-Boot) and OTA updates
- Implemented alternate firmware signature scheme on the Ardupilot firmware, with Hashicorp Vault integration
- Partially automated GPS acceptance testing, identified and implemented areas for improvement.
- Wrote TUN driver over BD Spot SDK since the robot doesn't support bridging the two external ethernet ports
- YOLOv9 finetune & C++ inference with TensorRT and Jetson's HW decode, CPU 300% to 20%, lower latency
- Developed UI for Meta SAM-2 for automatic labeling of videos for use in Object Detection finetuning

Purdue University / *CS 252 (Systems) TA / Spring 2024 / West Lafayette, IN*

- Assisting a lab section of ~30 students with projects like a shell interpreter and a web server
- Holding office hours to help students with lab assignments and other course material
- Grading lab assignments, providing feedback to students, and participating in weekly meetings

Ansys Government Initiatives / *Software Engineer (Intern) / Summer 2023 / Exton, PA*

- Added support for glTF models and 3D Tiles in STK's Electro-Optical/IR simulation
- Refactored legacy C++ to modern idioms (smart pointers, RAII, etc.), improving maintainability
- Implemented GPU acceleration to graphics-based analysis tools using OpenCL, offering ~50x speedups
- Explored real-time techniques for atmosphere rendering in STK's solar system rendering engine

Ansys Government Initiatives / *Software Engineer (Intern) / Summer 2022 / Exton, PA*

- Gained experience working in a large C++ codebase, using MFC and the Component Object Model (COM)
- Implemented new ITU-RF radio propagation standards for STK's Communication and Radar component
- Implemented an architecture for unit testing, using Google Test

Bloomberg LP / *Software Engineer (Intern) / Summer 2019 / New York, NY*

- Internal web application for NER labeling, React/Flask/MySQL. Used Git, Docker

Clubs / Projects

Purdue Space Program Liquids / *Avionics Software Lead / Since Fall 2021*

- Developing flight-critical software, peripheral drivers in C on FreeRTOS for a bipropellant rocket
- Developing a custom mission control interface, with high-rate plotting and real-time downsampling
- Designing a UDP telemetry protocol for sensor data, and a secure RPC protocol for telecommand
- Contributing to hardware design, including part selection, schematic capture, digital PCB layout, HITL testing

ML@Purdue / *Project Manager & Operations Officer / Since Fall 2021*

- Trained a PPO-based model in a simulation to learn a pathfinding policy for a VEX robotics game
- Worked on running YOLOv5 on a Jetson, and matching the simulation's input distribution to real world data

Personal Projects / *See more at sagarpatil.me*

- Statically-typed functional programming language implemented in Rust
- CPU ray tracer in Rust with BVH, importance sampling, and programmable shaders
- Discord chatbot that uses a locally running Llama2 (13B) model to generate responses

Recommendations

Adam Himes / *R&D Sr. Manager / Ansys Government Initiatives / Reference available upon request*

"He was an extremely driven self-starter with a passion for learning ... The knowledge Sagar demonstrated during his short internship with us impressed everyone, including our CTO"

Kevin Pietsch / *Software Engineer, Mentor / Bloomberg LP / Reference available upon request*

"...I expect he will be an asset to any teams he becomes a part of in the future"