Sagar Patil

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Education

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

Tracks: Systems, Machine Intelligence

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

Experience

IDEAS Lab @ Purdue / *Undergraduate Researcher* / *Since Spring 2024* / *West Lafayette, IN*

- Exploring techniques to generate meshes of photorealistic faces from text descriptions and reference imagery
- Testing techniques such as GAN inversion on existing methods like EG3D (3D StyleGAN by NVIDIA)
- Using OpenAI's CLIP with PyTorch and OpenCV to explore fesiablity of our planned approach
- Keeping up with the latest research in the field, contributing to discussion of possible methods

Purdue University / *CS 252 (Systems) TA* / *Since 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 techniques for atmosphere rendering in STK's massive world 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*

- Worked on an internal web application to label data and manage LSTM training for NER tasks
- Implemented features on all layers of the stack, including MySQL, Flask, and React

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, and PCB tracing

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

- Trained a PPO-based model in a simulation to learn a pathfinding policy for 2021 VEX Robotics
- Optimized YOLO object detection to run on a Jetson to perform state estimation of the game

Personal Projects / *See more at sagarpatil.me*

- LP constraint solver in C++, combined with raylib to make a GUI library
- Marching cubes algorithm in C# (and compute shaders) to meshify 3D scalar field
- Used mediapipe and a custom gesture recognition algorithm to make a Charades clone
- Made a Discord chatbot that uses a locally running Llama2 (13B) model to generate responses
- Scraped Purdue's course catalog to monitor class availability and send notifications on Discord

Recommendations

Adam Himes / *R&D Sr. Manager* / *Ansys Government Initiatives* / *adam.himes@ansys.com*

"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* / *Bloomberg LP* / *Reference available upon request*

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