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*

[0] Exploring the use of Vision Transformer produced latents to generate realistic Gaussian splats of faces
[1] Using OpenAI's CLIP with PyTorch and OpenCV to explore fesiablity of our planned approach
[2] 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*

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

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

[0] Added support for glTF models and 3D Tiles in STK's Electro-Optical/IR simulation
[1] Refactored legacy C++ to modern idioms(smart pointers, RAII, etc.), improving maintainability
[2] Implemented GPU acceleration to graphics-based analysis tools using OpenCL, offering ~10x speedups
[3] Explored techniques for atmosphere rendering in STK's massive world rendering engine

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

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

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

[0] Worked on an internal web application to label data and manage LSTM training for NER tasks
[1] 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*

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

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

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

Personal Projects / *See more at sagarpatil.me*

[0] LP constraint solver in C++, combined with raylib to make a GUI library
[1] Marching cubes algorithm in C# (and compute shaders) to meshify 3D scalar field
[2] Used mediapipe and a custom gesture recognition algorithm to make a Charades clone
[3] Made a Discord chatbot that uses a locally running Llama2 (13B) model to generate responses
[4] 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"

Skills

C, C++, Python, Scala, Haskell, Rust, Linux, Bash, Git, FreeRTOS, Javascript, Typescript, PyTorch, Langchain, Docker, Kubernetes, AWS (S3, EC2, Lambda), React, Svelte, Node, Express, Flask, PostgreSQL, MongoDB, Redis, CI/CD, OpenCL, OpenGL, CUDA, WebAssembly, x86(-64) AT&T Assembly, ARM Assembly, GCC, Valgrind, GDB, CMake, Make, Meson, Ninja, Blender, Unity, Vim, TCP/IP, UDP, HTTP(S), REST, GraphQL, gRPC