Saarang Srinivasan

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Education

Purdue University GPA: 3.99
Bachelor of Science in Computer Science (Honors) *West Lafayette, Indiana*

Concentrations: Machine Intelligence, Algorithms, Systems Software

Relevant Coursework: Data Structures & Algorithms, Data Mining & Machine Learning, Operating Systems, ML Systems (G), Motion Planning (G), Introduction to AI, Randomized Algorithms (G), Advanced Theory of Algorithms, Systems Programming, Reasoning About Programs (G), Computer Architecture, Object Oriented Programming, Theory of Computation (G). (G - graduate level)

Experience

Machine Learning Engineering Intern Dec 2024 – Present
Avoca AI *New York, NY / Remote*
- Working on AI CSR (Consumer Social Responsibility) through sales call outcome analysis using NLP/ML

Software Engineering Intern May 2024 – Aug 2024
Collins Aerospace / Raytheon Technologies *Cedar Rapids, IA*
- Built and certified flight control software for the military Boeing KC-46 Pegasus.
- Designed and implemented a new hardware configuration format for KC-46 Pegasus start-up, reducing file size by 72%.
- Created C/C++ tests to verify correctness of flight software based on composition analysis and MC/DC coverage.
- Automated data parsing and tracking using Python and ML techniques, improving speed and accuracy by 30%.

Algorithmic Game Theory Researcher May 2024 – Dec 2024
Dr. Simina Branzei, Purdue Computer Science Department *West Lafayette, IN*
- Researched reinforcement learning strategies applied to repeated fair division and Stackelberg games.
- Investigated strategy convergence and equitable outcomes in the repeated 'cake-cutting' problem for two learning agents.
- Developed simulations using Multiplicative Weight Updates and RL to validate theoretical results.

Software Engineering Intern May 2023 – June 2023
Hacklab Solutions Pvt Ltd *Bangalore, India*
- Built containerized AI product with server/client modules using Docker and Kubernetes for rapid deployment.
- Designed a master server integrated with a front-end dashboard, supporting Postgres/Redis for persistent storage.
- Implemented self-healing nodes, CI/CD pipelines, and load balancing, ensuring scalability (MLOps/DevOps).
- Optimized memory accesses, boosting deployment speed by 80% and reducing latency by 30%.

Projects

GNN Cost Model for Tensor Program Optimization | *PyTorch Geometric, TVM, NLP, Multithreading* Nov 2024
- Designed a Graph Neural Network (GNN)-based cost model to predict runtime of tensor programs.
- Integrated the model into TVM's search framework, replacing XGBoost for runtime prediction on NVIDIA V100 GPUs.
- Engineered features from TensorIR Abstract Syntax Trees (ASTs) using FastText embeddings trained on random walks.
- Surpassed XGBoost accuracy and validated model on the TenSet dataset.
- Slides: https://tinyurl.com/GNN-Project

Pulse - Convert Lectures to TikToks | *Next.js, Flask, PyTorch, OpenCV, Firebase, MongoDB* Jan 2024
- Developed a React.js web app to convert lecture videos/slides into TikTok-style clips, summarizing key topics.
- Built a robust two-layer MongoDB/Firebase DB architecture to increase video generation speed by 80%.
- Integrated with React Native iOS app for viewing generated videos, including deepfake videos and tweet summaries.
- Utilized OpenAI's Whisper API and Modal/PyTorch for video processing and Firebase/MongoDB for data storage.

Honors & Awards

Gold Medalist: Indian National Olympiad in Informatics 2022 (Top 10 in India).
ICPC Regionals: Rank 18 representing Purdue in the ACM International Collegiate Programming Contest Regionals 2022/23.
International Olympiad in Informatics Training Camp: Top 30 in India to be selected in 2021 and 2022.

Technical Skills

Languages: Python, C/C++, Java, JavaScript, Bash, R, MATLAB, ARM/x86, HTML/CSS, Rust
Frameworks/Tools: Pandas, Open-CV, Torch, DGL, Docker, Kubernetes, SQL, Flask, Firebase, Git, React.js, Node.js, Linux
Fields: System for ML, NLP, Machine Learning, Computer Vision, Full Stack Development, Algorithms

Activities

Course Development: CS381 Analysis of Algorithms (Fall '24, 400+ students), CS182 Discrete Math (Spring '24, 800+ students)
Teaching Assistant: CS381 (Fall '24), CS182 (Spring '24), CS311 Competitive Programming 2 (Spring '23)
USACO Tutor: Instruct Bay Area students in advanced algorithms for the USA Computing Olympiad with X-Camp Academy
Club Treasurer/Officer: Competitive Programming Union Club 2023-2024