SAARANG SRINIVASAN

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EDUCATION

Bachelors of Science in Computer Science (Machine Intelligence Track) **GPA: 3.99**

Purdue University, West Lafayette, IN, USA **Expected graduation date - May 2025**

***Current Coursework**: Operating Systems, Reasoning About Programs (Grad), ML Systems (Grad), Robot/Motion Planning (Grad)*

***Past Coursework:** Data Mining & Machine Learning, Introduction to AI, Randomized Algorithms (Grad), Advanced Theory of Algorithms, Systems Programming, Theory of Computation, Computer Architecture, Data Structures & Algorithms, Object Oriented Programming.*

EXPERIENCE

Collins Aerospace / Raytheon Technologies, Cedar Rapids, Iowa **May 2024 - Aug 2024**

Software Engineering Intern (Built flight control software for military plane Boeing KC-46 Pegasus)

- Converted plane configuration files to a new format to keep up with DO-178C software certification requirements.
- Optimized from 3500+ requirements to <1000 and generated/verified high-level software requirements in Rational DOORS.
- C/C++ testing of avionics software using formal methods, Structural Composition Analysis and Modified Condition / Decision Coverage.
- Utilized Python automation tools (pyautogui/pywinauto) and ML-based requirement tracking techniques for data scraping/parsing.

Purdue Computer Science Department, West Lafayette, USA **May 2024 - Present**

Undergraduate Algorithmic Game Theory Researcher

- Working with Dr. Simina Branzei and PhD student Reed Philips in the setting of repeated Stackelberg games using reinforcement learning.
- Studying extensions of the paper that proves equitable utility profiles in the repeated cake cutting with 2 learning agents.
- Research involves reinforcement learning, adversarial bandit learning, game theory, and algorithmic economics.

Hacklab Solutions, Bangalore, India **May 2023 - June 2023**

Software Engineering Intern

- Used Docker and Kubernetes to package/design system architecture for AI server and client modules for quick deployment.
- Designed system that interacted with the front-end dashboard, stored data persistently and handled Postgres/Redis communication.
- Handled self-healing nodes, CI/CD, and load-balancing while keeping future scalability and cloud integration in mind (MLOps/DevOps).
- Achieved 80% increase in product deployment speed and 30% latency reduction through optimized memory access and system design.

X-Camp Academy, San Jose, California **July 2023 - Present**

USA Computing Olympiad Tutor and Instructor

- Organized and taught a 2-week offline summer & winter camp to prepare students for USA Computing Olympiad (USACO).
- Conducted and prepared 20+ mock contests and classes on topics like graph theory, dynamic programming, greedy, binary search etc.

Webee.io (The Data Mine: Purdue University), West Lafayette, USA **Aug 2022 - May 2023**

AI/ML Engineer

- Developed IoT and unsupervised learning solutions to determine causes for machine failure using sensor data for industrial machines.
- Enabled customers to get real-time alerts for when a machine is behaving anomalously using machine learning.
- Performed data cleaning methods and linear regression to fill missing data, GMM clustering to partition machine sensor data.
- One-class SVM and LSTM model to generate a probability distribution to recognize outliers/anomalies.

HONORS & ACTIVITIES

- **Gold Medalist** - Indian National Olympiad in Informatics 2022 (Top 10 in India).
- Top 30 in India to qualify for **International Olympiad in Informatics Training Camp** 2021 and 2022.
- Rank 18 representing Purdue in the ACM **International Collegiate Programming Contest Regionals** (ICPC) among teams from CMU, Waterloo, UoFT, Penn State, etc.
- **Course Development** & TA for CS182 Discrete Math (created homeworks and 150+ quiz problems for 800+ students, Spring 2024).
- **Teaching Assistant** for CS381 Analysis of Algorithms (Fall '24), and CS3311 Competitive Programming 2 (Spring '23).
- **Club Treasurer** for Competitive Programming Union Club 2023-2024.

PROJECTS

Pulse - Convert Lecture Videos to TikToks (Top 8, Boilermake Hackathon 2024)

- React.js web app that lets you upload lecture videos or slides and converts them to TikTok-style short videos/clips.
- ChatGPT API / other LLMs to convey most important topics from lecture and self-trained Whisper AI models for video processing.
- Linked with React Native iOS app to view generated videos – contains deepfake videos of celebrities and their edited tweets.
- OpenCV/FFMPEG for video generation and combination of Firebase/MongoDB for storage.

Personalized Bash Shell

- Developed a personalized version of GNU Bash using Lex/Yacc for language parsing and grammar.
- Implemented for/while/if statements, subshells, piping, file redirection, etc using various system calls and child processes.
- Signal handling, line editing shortcuts for auto tab completion, arrow key movement, history, ctrl-C, and zombie process elimination.

TECHNICAL SKILLS

Programming languages: Python, C/C++, Java, JavaScript, Bash, R, MATLAB, ARM/x86, HTML/CSS, Rust

Tools/Frameworks: Pandas, Open-CV, Torch, Docker, Kubernetes, SQL, Flask, Firebase, Git, Java Swing/FX, Agile/Jira, Unix/Linux, Windows

Certifications: MITx: 6.431x Probability and Uncertainty of Data, Data Structures & Algorithms Certification by CodeChef

Fields: Computer Vision, NLP, Machine Learning, Embedded Systems, Full Stack Development, Algorithms Engineering, System Programming