Samanvita Singhania

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EDUCATION

Carnegie Mellon University - Bachelor of Science in Computer Science and AI **June 2027**

- **QPA**: 3.95/4.0
- **Honors:** Deans List with High Honors, Fall 2023, Spring 2024, Fall 2024, Spring 2025
- **Relevant Coursework:** Grad Intro to ML (10-701), Computer Vision (16-385), Intro to Computer Systems (15-213), Principles of Functional Programming (15-150), Probability & Computing (15-259)

WORK EXPERIENCE

Datastage Data and AI Intern - IBM **May. 2025 – August 2025**

- Developed agentic AI tool for IBM's Datastage ETL tool, used by 4000+ enterprise companies across 8 countries
- Added natural-language support for 15+ features using many-shot prompting and comprehensive test/training suite
- Led redesign of conversation framework to support human-in-the-loop workflow
- Integrated internal REST APIs w/ LLM foundation model outputs in Agile team of 20 engineers & researchers

Teaching Assistant - Intro to Computer Science, Carnegie Mellon University **Jan. 2024 – May 2025**

- Taught data structures & algorithms (graph search, dynamic programming, hash tables) & low-level C concepts (memory management, pointer arithmetic, bytecode) to 100 students, maintained 80%+ recitation attendance
- Helped 500 students in 1:1 weekly office hours to reach self-sufficiency
- Redesigned course content to emphasize conceptual understanding over short-term outcomes

Full-Stack Software Intern - EOSPACE Inc. **Sep. 2022 – Jun. 2023**

- Built SQL database and web application to track 1000s of devices through production
- Developed product features including automated data scraping from CSV, filters and search functionality on front-end, custom views for different departments
- Integrated system with existing workflow to enable team of 30 to identify bottlenecks in manufacturing (increased efficiency by 30%)

RESEARCH & PROJECTS

Robotics/ML Research Assistant **Jan 2025 – Present**

- Working under Prof. Andrea Bajcsy to develop frameworks and algorithms for reliable and safe robot-human interaction in dynamic environments
- Developing multimodal generative world models by integrating visual (OpenCV) and haptic sensory data for more accurate behavioral prediction and corrections; using hardware-in-the-loop testing

Chairman and Software Lead - Autonomous Buggy **May. 2024 – Present**

- Led operations of CMU Robobuggy Club (25 members), which designs & races autonomous gravity-powered vehicles
- Developed computer vision stack with depth camera + LiDAR data fed into custom-trained YOLO model for real-time object detection and global positioning
- Refactored pathplanning and high-speed pathfollowing legacy code to a ROS 2 and CUDA-compliant system, containerized with Docker

Lighthouse Productivity Chrome Extension (TartanHacks) **Feb. 2025**

- Developed Chrome extension to track focus + alignment w/ user-specified goals through real-time screen analysis
- Integrated vision-language model (LlaVA) & optical character recognition (Tesseract) to interpret full-screen activity & alert user when distracted
- Triggered alerts in 3-5 s to target real distractions; 80% accuracy across 5 different content types & screen layouts

Astrophysics Simulation Research Assistant **May 2024 – Dec 2024**

- Tested & contributed to comprehensive galactic simulation library Cogsworth, enhanced function & ease of use
- Ran Monte-Carlo simulations of multiple galaxies with binary star mergers using Python to determine spatial distribution of short gamma-ray bursts (sGRBs)
- Visualized large-scale astronomical datasets using Matplotlib and Altair, providing insights into patterns of compact-object mergers

TECHNICAL SKILLS

Languages: C/C++, Python, Java, OCaml, JavaScript, HTML/CSS, C#, SQL, Visual Basic, Bash Scripting, Assembly
Tools: Git, Linux, Docker, ROS2, Vim, CAD,Jupyter, VS Code, Visual Studio, Postman, LaTeX
Libraries/Frameworks: Agile, RESTful API, ASP.Net Core, React.js, Pandas, SciPy, OpenCV, PyTorch, CI/CD