HARSHIT JAIN

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EDUCATION

The Pennsylvania State University, University Park PA Expected Graduation: Dec 2024
Bachelor of Science in Computer Science
GPA: 3.7/4.0 | Dean's List (5/5) | Technical Coach @ CodePath | AlgoPSU Captain @ ACM | Resident Assistant
Relevant Coursework: Data Structures and Algorithms, Math of Machine Learning, Operating Systems Design, Systems Programming, Supervised Machine Learning, Advanced Learning Algorithms (Deep Learning), Generative AI with LLMs, Theory of Computation, CodePath: (Intermediate+Advanced) Software Engineering, Database Management Systems

TECHNICAL SKILLS

Programming Languages: Python, C/C++, JavaScript, Java, HTML/CSS, MATLAB, Verilog, Assembly (64/32-bit x86)
Frameworks & Tools: AWS, TensorFlow/Keras, Scikit-Learn, Numpy, Node.js, React.js, Next.js, RESTful APIs, LaTeX, Git
Softwares: LLMs, MS SQL Server/MySQL/PostgreSQL, Linux/UNIX, SonarQube, Postman, Bitbucket, JIRA

WORK EXPERIENCE

Software Engineer Intern May 2024 - Present
Hughes Network Systems, LLC Germantown, MD

- Working within their Aviation business (Aero program)

Machine Learning Engineer Intern Jan 2024 - May 2024
Materials Research Institute (2DCC-MIP Team), Penn State University University Park, PA

- Leveraged 3 SOTA LLMs (GPT-4, Jurassic2, and Llama2) for chatbot-integrated answer retrieval using the RAG Model
- Architected a **Next.js** app with end-to-end AWS integration, optimizing **RESTful APIs** for scalability and deployment
- Automated Python-based **AWS Lambdas** for video processing and transcription, handling **50% user upload surge**
- Implemented AWS Rekognition for face recognition, enabling automatic tagging and improving content organization accuracy
- Engineered optimal **AWS EC2** instance selection, reducing launch times by **25%** through precise instance matching
- Utilized: Python, AWS, Next.js, LLMs, Deep Learning Models

Software Engineer Co-op May 2023 - Dec 2023
VIAVI Solutions Inc. Germantown, MD

- Collaborated with the 6-person R&D team to architect and implement a **Python-based** automated test suite on Linux systems for PNT instruments, ensuring exhaustive test coverage and strict compliance with the SCPI protocol
- Debugged PNT unit source code in **C/C++**, leading to a **55% reduction** in bugs and a **30% increase** in code coverage
- Executed 35+ long-term tests on core devices using SCPI commands, ensuring adherence to release-level quality standards
- Utilized: Python, C/C++, SCPI Protocol, Bitbucket, Confluence, SonarQube, Git, Agile, JIRA

Software Engineer Intern - Research Associate May 2022 - May 2023
Materials Research Institute (2DCC-MIP Team), Penn State University University Park, PA

- Engineered a **React.js** app, designing 50+ user-facing features across **20+ REACT** components (utilized Jest testing)
- Integrated an **MS SQL Server** relational database to manage data from **500+ instruments** across 18+ tables
- Automated **Python scripts** for data retrieval, manipulation, and integration with robust error handling and efficient filtering
- Research: Developed a **Python library** for the Raman Fitting model, enabling deconvolution of Raman spectra. The library facilitated interactive preprocessing, effective fitting, and data export, **reducing analysis time by 40%** (tested).
- Utilized: Python, JavaScript, React.js, Node.js, MS SQL Server, RESTful APIs, Git, HTML/CSS, JIRA

PROJECTS

Dynamic Memory Allocator [C/C++] Jan 2024 - Feb 2024

- Designed **custom malloc, free, realloc**; segregated free lists and footer optimization to improve memory management
- Achieved a **utilization score of 69%** and benchmark **throughput at 100%** across diverse computing environments

HiLite: AI AutoHighlighter [Python, Flask, React.js] Mar 2023 - May 2023

- Designed an **AI system** that summarizes text using Long Short-Term Memory (LSTM) networks
- Trained the model on the training set, using the validation set to monitor its performance and prevent overfitting

mdadm Linear Device [C/C++, Linux] Feb 2023 - May 2023

- Configured **16 disks of size 64 KB as a 1MB** linear device, providing users with a unified address space for data access
- Implemented mount/unmount operations to the linear device, mitigating potential data loss and system crashes
- Designed the read/write functions to set up in the linear device, providing users with comprehensive data access capabilities
- Engineered data caching solution to enhance system latency **reduced I/O wait time by 60%**