

# 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](#) | [Recommendations](#) | [Projects](#) | RA

**Relevant Coursework:** Data Structures and Algorithms, Operating Systems Design, Systems Programming, Computer Vision, [Supervised Machine Learning](#), [Advanced Learning Algorithms](#) (Deep Learning), [Generative AI with LLMs](#), Theory of Computation, CodePath: (Intermediate+Advanced) Software Engineering, Database Management Systems, Financial Engineering

## TECHNICAL SKILLS

**Programming Languages:** Python, C/C++, JavaScript/TypeScript, SQL, Java, Shell scripting, HTML/CSS, MATLAB

**Frameworks:** TensorFlow, Scikit-Learn, LangChain, Streamlit, Node.js, React.js, Next.js, GraphQL, RESTful APIs, Git

**Softwares:** [AWS](#), GCP, Azure, MS SQL Server/PostgreSQL, Linux/UNIX, Docker, SonarQube, Postman, Swagger, JIRA

## WORK EXPERIENCE

**Software Engineer Intern**

Aug 2024 - Present

Materials Research Institute (2DCC-MIP Team)

University Park, PA

- Orchestrated GraphQL APIs with AWS AppSync for video retrieval and interfaced with DynamoDB's API for CRUD Ops
- Deployed a Python-based agent workflow with LangChain, utilizing Pinecone to convert video metadata to vector embeddings
- Technologies Used: Python, Amazon Web Services (AWS), LangChain, Pinecone, Next.js, GraphQL

**Software Engineer Intern**

May 2024 - Aug 2024

Hughes Network Systems, LLC (Aeronautical Team)

Washington, DC

- Automated AWS-to-BigQuery pipeline with strict row-level validation & GCS audit trails, cutting manual processes by 95%
- Developed custom Python frameworks and optimized BigQuery SQL views on GCP to perform advanced calculations on flight performance metrics for Delta Airlines, processing data from 61k+ flights with sub-10s execution
- Designed an automated script for flight performance billing and dynamic performance adjustments for accurate invoicing
- Technologies Used: Python, Google Cloud Platform (GCP: Cloud Functions, BigQuery, Pub/Sub), SQL, Agile/Scrum

**Software Engineer Intern**

Jan 2024 - May 2024

Materials Research Institute (2DCC-MIP Team)

University Park, PA

- Integrated GPT-4o and Llama2 LLMs into a LangChain-based chatbot framework for answer retrieval via an RAG model
- Built a serverless Next.js app with AWS integration, optimizing RESTful APIs for high scalability and CI/CD workflows
- Developed a fully automated AWS Lambda pipeline for video processing, including transcription and AI-generated metadata
- Configured AWS Rekognition to boost speaker identification, improve transcription, and automate chapter generation
- Technologies Used: Python, Amazon Web Services (AWS), LangChain, Next.js, RESTful APIs, LLMs

**Software Engineer Co-op**

May 2023 - Dec 2023

VIAVI Solutions Inc. (PNT Team)

Washington, DC

- Engineered a Python-based automated test suite for PNT instruments on Linux, in collaboration with a 6-member R&D team, to validate system performance and ensure strict adherence to the SCPI protocol
- Troubleshoot PNT unit bugs, reducing by 55% and increasing code coverage by 30% (SonarQube) through C/C++ debugging
- Executed 35+ SCPI-driven long-term tests on core devices to ensure compliance with release-level quality standards
- Technologies Used: Python, C/C++, Linux, SCPI Protocol, Bitbucket, Confluence, SonarQube, Git, JIRA, Agile/Scrum

**Software Engineer Intern**

May 2022 - May 2023

Materials Research Institute (2DCC-MIP Team)

University Park, PA

- Engineered a scalable React.js app with 50+ user-facing features across 20+ components, and employed Jest for unit testing
- Integrated MS SQL Server to manage data from 500+ instruments, and organized it across 18+ BCNF-normalized tables
- Built a Python script for automated data retrieval and integration with a cloud-based data warehouse using ETL processes
- Research: Re-architected a Python library for the Raman Fitting Model ([try here](#)) to implement precise spectra deconvolution algorithms with automated data preprocessing, fitting, and export functions, reducing analysis time by 40% (validated)
- Technologies Used: 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