Abhinav Avasarala

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Education

North Carolina State University (NCSU) **May 2027 (Expected)**

B.S. Computer Engineering *Raleigh, NC*

- **GPA:** 4.00/4.00
- **Courses**: Software Development Fundamentals, Data Structures & Algorithms, C & Software Tools, Statistics for Engineers, Multivariable Calculus, Operating Systems, Signals & Circuits, Machine Learning, Fundamentals of Logic Design

Technical Skills

Languages: Java, Python, JavaScript, C, SQL
Cloud & DevOps: Goole Cloud Engineering Certificate, Google Cloud Platform (GKE, Cloud Run, VMs, Cloud SQL, Load Balancing, IAM, Functions), Docker, Terraform
Frameworks: ReactJS, FastAPI, Node.js + Express, Flask, CUDA, PyTorch
Databases & Tools: PostgreSQL, Pandas, NumPy, Scikit-learn, Git, Axios, REST APIs

Experience

iQuadra Information Services | *ReactJS, Axios, REST, Figma* **May 2025 – August 2025**

Software Engineer Intern *Remote*

- Developed a bug-tracking system using ReactJS front-end, Node + Express back-end, PostgreSQL database, and Axios integration
- Designed **12+ RESTful API endpoints** using Node + Express with PostgreSQL for persistence
- Improved bug resolution time by **20%** through priority-tagging and streamlined workflow
- Led a team of 3 front-end devs to build responsive UIs from Figma designs using React

North Carolina State University | *CUDA, PyTorch, Python, C++* **Jan 2025 - May 2025**

Research Intern *Raleigh, NC*

- Developed a GPU-accelerated linear regression pipeline using **PyTorch, CUDA, and C++**, incorporating dynamic **low-bit quantization (2–8 bits)** to reduce memory footprint and improve runtime.
- Engineered **3 custom CUDA kernels** for combined min/max reduction, fused subtract-quantize, and quantize-aware matrix-vector operations, eliminating redundant host-device transfers.
- Integrated the full pipeline into a **modular PyTorch extension**, enabling runtime control over quantization levels
- Achieved a **3× speedup and 60% GPU memory reduction** on a 10M-sample dataset

Projects

Stock Sentiment Analyzer | *Python, FastAPI, FinBERT, HuggingFace*

- Built an **end-to-end ML pipeline** where users input portfolios and receive real-time news sentiment on stocks
- Combined relevant news from Reddit, Yahoo Finance, NewsAPI and applied **NLP sentiment classification**
- Compared FinBERT and Vader, selecting FinBERT for **92% test accuracy**

Mood-Based Music Recommendation App | *ReactJS, Node.js, Express, NLP Libraries, OpenAI API*

- Implemented a **full-stack web application** to recommend songs based on user input's sentiment analysis
- Integrated **Spotify API** to deliver 5 real-time personalized songs per query
- Utilized React for the frontend and Node.js with Express for the backend to handle **RESTful API integration**, and implemented secure user authentication and session management using **PostgreSQL** and **bcrypt hashing**
- Achieved **90%+ mood detection accuracy** using custom NLP logic

Issue Manager | *Java, I/O, JUnit*

- Implemented a **bug management system** using Java and a finite state machine (FSM) architecture, enabling flexible tracking of issues through phases like creation, assignment, completion, and reopening.
- Managed data via **CSV-based File I/O** for persistent bug history across sessions
- Wrote 30+ unit tests and 10 integration tests, achieving **95% code coverage**
- Used OOP concepts (Polymorphism, Enums) to reduce code complexity by **40%** over baseline

Leadership / Extracurricular

- **IBM-NCSU Pathfinder program:** Learned about various IBM & Red Hat technologies like Ansible & watsonx
- **180 Degrees Consulting:** Led a team of 4 student consultants to improve a non-profit client's marketing strategy