Aaryan Dave

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Education

Purdue University **Aug. 2022 – May. 2025**
Bachelor of Science in Computer Science (Machine Intelligence), GPA: 3.9 *West Lafayette, IN*

Thomas Jefferson High School for Science and Technology **Aug. 2018 – Jun. 2022**
Advanced Studies Diploma, GPA: 4.4 *Alexandria, VA*

Technical Skills

Languages and Frameworks: Python, C, C++, Java, Rust, SQL, HTML/CSS, R

Tools and Databases: Linux/UNIX, Docker, Kubernetes, Git, PostgreSQL, Vector Database (Pinecone), OpenTelemetry, REST APIs

AI/ML and Other Skills: Neural Networks, Natural Language Processing (NLP), Computer Vision, Deep Learning, Large Language Models, Scikit-Learn, TensorFlow, PyTorch, HuggingFace, Langchain, Retrieval Augmented Generation (RAG)

Experience

Marriott International **June 2024 – Present**
Software Engineering Intern *Bethesda, MD*

- **Accelerated production deployment times by 40%** through the development and deployment of Python-based application templates, expediting time-to-market for new products.
- **Engineered modular libraries** for PostgreSQL, OpenTelemetry, REST APIs, and Kafka, facilitating seamless integration across **5+ development teams**.

Purdue University E-Lab **August 2023 – Present**
Undergraduate Research Assistant *West Lafayette, IN*

- **Pioneered a multi-modal large language model (LLM)** to create a chat-based virtual research scientist, enhancing accessibility to scientific data.
- **Enhanced document-based visual question answering (VQA) techniques**, improving information extraction accuracy from scientific papers **by 25%**.
- **Optimized the Retrieval Augmented Generation (RAG) pipeline** by incorporating data locality and context, resulting in a **30% increase** in relevant text generation.

Johns Hopkins University Applied Physics Lab **August 2023 – February 2024**
Software Engineer *Remote*

- **Automated web scraping** for news article databases, increasing real-time data collection efficiency by **185%**.
- **Applied Named Entity Recognition (NER)** to identify key entities and relationships, enhancing article categorization precision by **35%**.
- **Developed and optimized a large-scale knowledge graph** using advanced LLMs, improving data integration and query performance by over **50%**.
- **Collaborated directly with clients**, providing progress updates and implementing feedback, ensuring project alignment with client needs.

Projects

Wave | *CV, HCI, Computer Automation, LLMs* **February 2024 – Present**

- **Pioneered an innovative approach** for intuitive human-computer interaction through seamless integration of voice commands and hand gestures.
- **Engineered a dynamic system** capable of autonomously formulating and executing **multi-step tasks** in **real-time**.
- **Adapted a hand-detection model** originally designed for event cameras to operate effectively across diverse consumer-grade webcams, **broadening accessibility and applicability**.

Buoy. Computer Vision Algorithm | *CV, Object Detection* **December 2021 – May 2022**

- Designed and programmed **a novel computer vision solution** to the salient object detection problem.
- **Experimented with algorithmic efficiency improvements** pertaining to image simplification, multi-object detection, and visual color-space remapping.
- **Authored a research paper** detailing the algorithm development process, from dataset selection to model refinement.

Notion Assignment Manager | *NLP, Database Automation, REST APIs* **May 2021 – May 2024**

- Developed a Python script to access the school's gradebook API, automatically updating task lists in Notion.
- **Utilized natural language processing** to identify upcoming assignments, automatically populating a local database with **98%+ accuracy**.
- **Deployed the script on a cloud server** for autonomous execution, eliminating the need for user input and ensuring real-time updates.

Relevant Coursework

Artificial Intelligence and Machine Learning: Introduction to Artificial Intelligence (Python), Data Structures and Algorithms (C++), Analysis of Algorithms

Programming and Systems: Programming in C, Object-Oriented Programming (Java), Computer Architecture (Assembly, C)

Statistics and Mathematics: Probability, Linear Algebra, Discrete Mathematics

Specialized Research: Automation Robotics Research, Web Info Search and Management (Python)