Jay Paun

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Work Experience

University of Maryland, Baltimore County (UMBC)
A.I. Researcher

May 2024 – Present
Baltimore, MD

- Developed a multimodal lie-detection system combining EEG signals and visual data, increasing classification accuracy by up to 89% across diverse subjects and improving applicability in healthcare and HCI use cases.
- Engineered scalable data pipelines for preprocessing and augmentation, expanding training data by 4x and enhancing model generalization; a research paper based on this work is currently under peer review.

Hewlett Packard Enterprise
Software Engineer

Feb 2023 – Jul 2023
Bangalore, India

- Automated infrastructure workflows using Ansible and Jenkins, reducing manual intervention by 40% and increasing deployment speed by 25%.
- Optimized cloud infrastructure on AWS (EC2, S3, DynamoDB), boosting application performance and reducing latency by 30% under peak loads.

IBM India
Software Engineer

Mar 2022 – Sep 2022
Bangalore, India

- Created a log assessment utility with error sequence detection, automated reporting, and support for 1000+ log files, accelerating root cause analysis by 20%.
- Implemented keyword-based filtering and stack trace isolation, significantly improving debugging workflows for large-scale enterprise applications.

Projects

Fine-Tuning LLaMA 2 with QLoRA
Google Colab, Hugging Face

- Applied QLoRA techniques to fine-tune LLaMA 2–7B with 4-bit quantization, reducing GPU memory consumption by 60% while preserving 95% task-specific accuracy.
- Optimized training workflow to accelerate iteration cycles by 40%, enabling quicker prototyping and seamless deployment of custom LLMs.

Distributed File System
Python, TCP/IP, Docker, Kubernetes

- Developed a distributed file system that handles node failures and balances request load, improving reliability and access efficiency by 30%.
- Packaged in Docker and managed via Kubernetes, streamlining deployment processes and ensuring scalability across distributed systems.

PyBot – Machine Learning Chatbot
TensorFlow, NLP

- Made a chatbot using ML and NLP techniques, improving intent recognition accuracy by 25% and boosting user engagement across test queries.
- Deployed in containerized environments using Docker, achieving consistent performance across platforms with reduced deployment errors.

Brain Tumor Detection Web App
PyTorch, Flask

- Created a web-based MRI classification system with Machine Learning and Deep Learning models like CNNs and transformers, reaching 94% accuracy in tumor detection while reducing false positives.
- Enhanced inference speed by 35%, enabling real-time diagnostics in clinical settings via a user-friendly web interface.

Technical Skills

- Programming Languages: Python, JavaScript, Java, HTML, CSS, Shell Scripting
- Frameworks & Version control: Flask, React.js, Node.js, PyTorch, TensorFlow, Redux, OpenCV, Express.js, github, git
- Databases: MySQL, MongoDB, PostgreSQL
- DevOps & APIs: AWS (EC2, S3, Lambda, SageMaker), Docker, Jenkins, REST, Git, Prometheus, Grafana
- Methodologies & Tools: SDLC, Agile/Scrum, OOP, Data Structures & Algorithms, Tableau, Jupyter Notebook, JIRA
- Domain Expertise: Full-Stack Development, Computer Vision, Large-Language Models, Deep Learning, Machine Learning, Neural Networks, Human–Robot Interaction

Education

University of Maryland, Baltimore County (UMBC)
M.S. in Computer Science

Aug 2023 – May 2025
Baltimore, MD

B.M.S. College of Engineering (B.M.S.C.E)
B.E. in Information Science

Aug 2018 – May 2022
Bangalore, India