

Pranav Saran

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Education

Case Western Reserve University (GPA: 4.0/4.0)

Cleveland, OH

Computer Science B.S, Computer Engineering B.S.E

Aug. 2024 – May 2028

- **Coursework:** Data Structures, Algorithms, Computer Security, Discrete Math, Logic Design and Computer Organization, Linear Algebra, Database Systems
- **Involvement:** Deans High Honor List, University Program Board, Club Badminton Events and Outreach Manager, Club Badminton Tournament Team, Global Health Design Collaborative - Pulse Ox Team

Experience

Research Intern

Oct. 2025 - Present

Human Fusions Institute

Cleveland, OH

- Coded R pipelines to analyze multimodal biometric data (EEG, GSR, HR) for cognitive load modeling.
- Applied human-in-the-loop systems to iteratively refine signal processing models and improve interpretability.
- Reduced noise and missing-data artifacts by 35% through automated preprocessing and detrending algorithms.

Machine Learning Researcher

Jan. 2025 - Jun. 2025

Algoverse

Palo Alto, CA

- Achieved 83% idiom and 78% metaphor accuracy with a hybrid mBERT+BiLSTM for low-resource Konkani.
- Reduced model size via pruning while retaining 100% idiom and 88% metaphor accuracy.
- Benchmarked robustness with ablation studies on mBERT, IndicBERT, and XLM-R.

Software and Electronics Engineer

Sep. 2024 – Sep. 2025

Case Global Health Design Collaborative

Cleveland, OH

- Built a custom ESP32-C3 Soft AP to stream MAX30102 data, boosting real-time monitoring efficiency by 40%.
- Developed a Python/Kivy app for heart rate and SpO₂ visualization from 500+ sessions, raising engagement 60%.
- Improved data reliability 40% with a detrending algorithm; MVP award, and 2nd Place at CWRU Intersections.

Projects

ScrapeSense - Price Competition Analysis Platform | Python, Langchain, OpenAI, tinyDB, streamlit, Oxyllabs.io

- Built ethical web scraping pipelines to extract real-time e-commerce and competitor data using oxyllabs API.
- Implemented Pydantic validation through Langchain to ensure AI-Agent generated insights are accurate.

GenMe - A ReadME Generator Agent | Python, SmolAgents, OpenAI GPT-4, Gradio

- Built an autonomous LLM agent to analyze large codebases and auto-generate technical documentation.
- Developed a toolchain with Gradio for code parsing, dependency inference, and human-agent collaboration.

Med Lens - Multi Task Clinical NLP Pipeline | BERT, HuggingFace, MIMIC-III

- Fine-tuned BioBERT on 40K+ MIMIC-III notes, reaching 91% ICD F1 and 89% NER accuracy.
- Boosted summarization (+18%) and cut model size 30% with ROUGE benchmarking and pruning.

Publications

- **Pruning For Performance: Efficient Idiom and Metaphor Classification in Low-Resource Konkani Using mBERT.** AACL 2025, 2nd Author

Technical Skills

Languages: Python, Java, C++, C#, JavaScript, SQL(Postgres), Bash, MATLAB

Machine Learning: PyTorch, TensorFlow, Scikit-learn, Transformers, HuggingFace, Jupyter, Computer Vision

Frameworks: LangChain, Next.js, FastAPI, React, REST APIs, WebSockets, Node.js, Express

Data Systems: Hive, PySpark, Apache Airflow, Milvus, BigQuery, Azure SQL, GCS, PostgreSQL, Jetson

Infrastructure & Dev Tools: Docker, CUDA, GPU Programming, Linux, Git

Concepts: Data Pipelines, LLM Inference, RAG Architectures, Agentic Systems, Attention Mechanisms, Production Deployment, Backend/Full-Stack Development, CI/CD, Software Engineering, Microservices, Distributed Systems, Embedded Systems