Tejaswi V. Panchagnula

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EDUCATION

Master of Science in Electrical and Computer Engineering   **expected May 2027**
Purdue University, West Lafayette, IN (Advised by: Dr. Fengqing Maggie Zhu, VIPER Lab)
Coursework: Deep Learning for Computer Vision, NLP, AI, Random Variables, Linear Algebra
Bachelor of Technology in Electronics and Communication Engineering   **2020-2024**
Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram   **GPA: 8.71/10**

SKILLS

Programming: Python, C/C++, MATLAB, SQL, Bash, Git, Linux
Frameworks: PyTorch, TensorFlow, scikit-learn, NumPy, Pandas, Keras, LightGBM, OpenCV, LangChain, PySpark
Tools/AI Systems: OpenAI GPT-5, Colab Pro, Hugging Face, Weights and Biases, FastAPI, AWS, Streamlit

WORK EXPERIENCE

Research Associate, Walmart Center for Tech Excellence, IIT Madras   **June 2024 - July 2025**
- Developed manufacturing data analytics tools for MSMEs introducing small scale enterprises to AI including predictive analytics, anomaly detection and time series forecasting pipelines.

Research Intern, SENAI Lab, IIT Madras (Prof. Raghunathan Rengaswamy)   **Jan 2023 - Jan 2025**
- Created one of the world's largest human eye gaze datasets (4 mil datapoints) and showed Levy Walk statistics in human vision, proving humans follow optimum path while looking at images.
- Developed and trained MobileNet v2 based U-Net CNN, including data processing, model optimization, and ablation study with transformers and RNNs, achieving high fidelity fixation heatmaps predictions
- Achieved high Pearson correlation score >90% between generated fixation maps and ground truth data. Both data and findings are being submitted for archival journal publication.

RESEARCH PROJECTS

Autonomous Incident Response Agent | AWS Lambda, Bedrock (Claude), Python
- Engineered a serverless autonomous agent that processes unstructured natural language tickets and executes remediation actions by chaining Claude 3 Haiku with deterministic Python logic.
- Implemented a constrained decoding framework by enforcing strict JSON output schemas and integrating post-processing sanitization logic, ensuring reliable deterministic execution from stochastic LLM outputs.

Adaptive Cognitive Architecture for LLMs | Langchain, PyTorch
- Engineered an adaptive LLM system with dynamic modular AI routing and self-reflective feedback dynamically reallocating computation to minimize surprise and sustain reasoning ability - enabling efficient, reasoning capable large language models that adapt to task complexity in real time.
- Benchmarked vs static Generative AI models, with 10-15% FLOPs differences and 50-100ms overhead reduction, while enabling scalable interpretability and optimization logging.

Algorithmic Trading System for ETFs | LightGBM, XGBoost
- Developed a LightGBM-based multi-ETF trading system using XGBoost and hyperparameter tuning with dynamic sizing, volatility filters, trailing stops, and trend-aware entries/exits.
- Achieved average CAGR 15.3%, Sharpe 0.87, Calmar 0.53 across SPY, QQQ and DIA, consistently outperforming buy and hold on a risk adjusted basis.

PUBLICATIONS

Tejaswi V. Panchagnula, "Foraging with the Eyes: Dynamics in Human Visual Gaze and Deep Predictive Modeling." (2025). (https://arxiv.org/abs/2510.09299)

LEADERSHIP AND CO-CURRICULAR ACTIVITIES

- Board member of the ECE Graduate Student Association at Purdue; revived the social media presence of the organization, enhancing a sense of community and networking within Purdue ECE.
- Unanimously elected General Affairs Secretary of the IIITDM student body.
- Won back-to-back gold medals (2023 and 2024), playing for the institute basketball team at the Inter IIIT Sports meet, an inter collegiate league with over 25 teams.