Pranav Viswanathan

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US Citizen

EDUCATION

Northeastern University, Boston, MA   **Sep 2024 - May 2026**
Master of Science, Computer Science
- **Coursework:** Machine Learning, Machine Learning Operations, Foundations of AI, Algorithms

Vellore Institute of Technology, Chennai, India   **May 2024**
Bachelors in technology, Computer Science and Engineering
- **Coursework:** Cloud Computing, Computer Architecture, Operating Systems, Distributed Systems, Networking

WORK EXPERIENCE

NergyLive   **May 2023 - Jul 2023**
Project Intern   *Kerala, India*
- Built real-time HVAC anomaly detection using isolation forests and statistical process control, processing 10K+ sensor readings/minute with sub-100ms latency
- Built interactive Plotly dashboards with drill-down capabilities for 20+ system parameters, enabling engineers to identify root causes 3x faster and reducing average troubleshooting time from 45 to 15 minutes
- Collaborated with cross-functional teams to deploy the anomaly detection system into a live production environment, reducing downtime incidents and cutting maintenance costs by 15%.

PROJECTS

NeuroPilot   **Jan 2025 - May 2025**
Northeastern University   *Boston, MA*
- Engineered and benchmarked reinforcement learning agents in the CarRacing-v3 environment, showcasing strengths and limitations of classical vs. deep RL approaches.
- Designed a full training pipeline with epsilon-greedy exploration, experience replay, and target networks, achieving measurable improvements in sample efficiency and policy stability.
- Integrated advanced evaluation and visualization techniques (reward curves, exploration decay, policy rollouts) to track agent performance and validate generalization across dynamic racing tracks.

HVAC Anomaly Detection   **May 2023 - Jul 2023**
NergyLive   *Kerala, India*
- Designed and implemented an unsupervised anomaly detection system for HVAC sensor data, using techniques such as time-series feature engineering, statistical thresholds, and machine learning models to detect anomalies in operational behavior.
- Developed automated preprocessing and data pipeline components (data cleaning, normalization, sliding windows) to ensure robust model input, achieving improved detection precision and reducing false positives in live environment simulations.
- Evaluated model performance via metrics such as ROC-AUC, precision/recall, and detection latency; visualized anomaly patterns to support root cause analysis and enable actionable insights for maintenance optimization.

AegisNav   **Jan 2022 - Mar 2022**
Vellore Institute of Technology   *Chennai, India*
- Architected a computer vision pipeline (using OpenCV on Raspberry Pi + Arduino) to process real-time video/audio feed for object/speech detection, enabling embedded inference capabilities at the edge.
- Integrated Haar cascade classifiers and audio/speech modules to detect environmental cues, designed for pipeline performance tuning in resource-constrained hardware (CPU/RAM limits), demonstrating efficiency trade-offs in model complexity vs latency.
- Developed modular system for sensor fusion and signal processing combining visual and auditory inputs, enabling more robust detection under varying environmental conditions—laying groundwork for future ML model training or transfer learning enhancements.

TECHNICAL KNOWLEDGE

- **Languages**: Python, Java, C/C++, Git, Matlab, Javascript
- **Machine Learning & AI**: Supervised/Unsupervised Learning, Reinforcement Learning, Feature Engineering, Model Optimization
- **Frameworks and Libraries**: TensorFlow, PyTorch, Scikit-learn, Keras, OpenCV, Hugging Face, Pandas, NumPy, Matplotlib, Seaborn
- **Certifications**: Google Cloud Essentials, Create and Manage Google Cloud Resources, Postman Student Expert, Supervised Machine Learning: Regression and Classification