

Pranav Ponnusamy

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EDUCATION

Georgia Institute of Technology

BS, Computer Science and Math

Atlanta, GA

May 2028 (Expected)

West Shore Jr/Sr High School

Rank: 4/140; GPA: 4.65; Courses: Calculus 3, Java, Data Structures & Algorithms, Discrete Math

Melbourne, FL

May 2024

EXPERIENCE

Emdedded Lead

Shreya Dixit Memorial Foundation - Innovation Labs

May 2022 – Present

Remote

- Collaborating with a team of interns to jointly develop SafeMaps, an algorithm that provides on-road navigation with a priority on safe routing, using historical accident data acquired from the Minnesota Department of Transportation.
- Led a team of 6+ to design embedded hardware & software to analyze driver behavioral trends associated with drowsy driving.

Deep Learning Research Intern

Florida Institute of Technology

Dec 2023 – Present

Melbourne, FL

- Researching differential privacy integration in Generative Adversarial Networks (GANs) to generate synthetic medical data.

Machine Learning Intern

FieldWorx

May 2022 – August 2023

Melbourne, FL

- Developed an algorithmic approach using an Extended Kalman Filter (EKF) and time series data in C++ for wave height estimation using the IMUs on low-cost data buoys.
- Helped implement a routine in ROS Noetic to pilot an autonomous underwater vehicle (AUV) running ardupilot firmware to detect and retrieve buoys identified by aprilTags autonomously.

PROJECTS

3rdEye: Driver Monitoring System | Python, C++

August 2021 – Present

- Developed a real-time driver drowsiness and distraction detection system in Python, utilizing machine learning frameworks such as TensorFlow and Keras to implement and train a CNN based on the EfficientNet architecture for accurate vision-based detection.
- Utilized OpenCV for computer vision tasks, including facial landmark detection with Google's BlazeFace model and feature extraction with Histogram of Oriented Gradients (HOG), optimizing the pipeline for deployment on a Raspberry Pi platform
- Integrated mmWave radar technology for non-invasive heart rate monitoring, and utilized SciPy for signal cleaning with Inverse Fast Fourier Filter and Power Spectral Density (PSD) analysis to calculate Pulse Rate Variability (PRV) for proactive drowsiness detection.

PoetryGPT (In progress) | Python

May 2024 – Present

- Developing PoetryGPT, a tool for analyzing sentiments and themes in poetry, by utilizing BeautifulSoup to web scrape poems from literary repositories.
- Preprocessed collected data using NLTK and SpaCy to prepare it for analysis.
- (In progress) Utilizing the LLaMA3 model to conduct sentiment analysis and theme extraction, uncovering recurring themes and emotions in poetry.

TECHNICAL SKILLS

Languages: Java, Python, C/C++, JavaScript, HTML/CSS

Developer Tools: Git, Google Cloud Platform, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse

Libraries: Keras, SciPy, TensorFlow, Pandas, NumPy, Matplotlib, BeautifulSoup

Awards: 2x ISEF Finalist, ISEF Special Award (\$360,000 scholarship), 3rd Place @ CodeQuest 2023, National Merit Commended