

CHETAN SAI BORRA

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EDUCATION

TEXAS A&M UNIVERSITY, COLLEGE STATION, TX

Texas, USA

Master of Science in Computer Engineering, **GPA: 4.**

Aug 2024 - May 2026

Coursework: **Machine Learning**, AI Robotics, **Reinforcement learning**, **Computer Vision & Robot Perception**.

VELLORE INSTITUTE OF TECHNOLOGY

Vellore, India

Bachelor of Technology in Electronics & Communication Engineering, **GPA: 3.61/4.**

Aug 2020 - May 2024

Coursework: **Robotics and Automation**, Control Systems, IOT Domain Analyst, Digital Signal Processing.

TECHNICAL SKILLS

Programming Languages: Proficient in Python, MATLAB, C++, Java, MySQL.

Software & Tools: ROS 2, Gazebo, Rviz, Fusion 360, **Jupyter Notebook**, Anaconda, GitHub, Microsoft 365, Google Colab, VS Code, Linux, **CUDA**, LM Studio, Arduino, Raspberry Pi, SCADA.

Machine Learning: Pytorch, TensorFlow, Keras, Scikit-learn, **OpenCV**, **Hugging Face Transformers**, **LLMs**.

EXPERIENCE

VELLORE INSTITUTE OF TECHNOLOGY

Vellore, India

Research Assistant

Dec 2023 – May 2024

- Engineered **W-Net and U-Net architectures** for brain tumor segmentation in MRI images and Computer Vision, Accomplishing over **90% accuracy** and Amplifying delineation of tumor regions in BraTS 2020 Dataset.
- Optimized tumor boundary detection, attaining a high **Mean Intersection Over Union (Mean IOU of 72%)** and **Dice Score**.
- Experimented with models including **VGG16, Res-Net, and Dense-Net** blocks to evaluate performance and refine segmentation accuracy.
- Implemented techniques for model evaluation and **parameter tuning**, **streamlining computational efficiency** and ensuring **robust segmentation** outcomes across diverse datasets.

DEFENCE RESEARCH & DEVELOPMENT LABORATORY (DRDL)

Hyderabad, India

Research Intern

May 2023 – Jul 2023

- Formulated and simulated an advanced aircraft pitch control system utilizing **PID controllers** in **MATLAB and Simulink**, leveraging machine learning techniques to enhance control precision and achieve an **11% improvement in system stability**.
- Deployed optimization strategies to refine system dynamics, effectively reducing overshoot by 10% and improving overall response time by 10%, ensuring robust and **efficient control performance**.
- Collaborated closely with Shri. Murali Mohan Gade (Scientist 'F', DOS, DRDL) to control design, advancing intelligent control strategies for aerospace systems and contributing to cutting-edge developments in **robotics and autonomous** aircraft control.

PROJECTS

IMAGE CLASSIFICATION USING DEiT WITH TRANSFER LEARNING

Dec 2024 – Jan 2025

- Designed and trained a DeiT (**Data-efficient Image Transformer**) **Vision Transformer** model from scratch for image classification with 7 classes, incorporating Fine-tuned **transformer blocks** for Elevate performance.
- Attained **76% accuracy** on benchmark dataset, surpassing target accuracy of 70%, by leveraging **CUDA** for efficient **GPU computation**.
- Adapted **transfer learning** by freezing pre-trained blocks in the **Vision Transformer model**, customizing remaining layers to Boost accuracy for **multi-class image classification** of buildings.
- Utilized **advanced computer vision techniques** with Pytorch to preprocess images, implement custom Transformer blocks, and **tune hyperparameters** to improve **model generalization** and overall accuracy.

MEAL NUTRITION ANALYSIS

Sep 2024 – Dec 2024

- Processed diverse data types using advanced techniques, creating a unified **predictive pipeline** with a **neural network architecture** combining **LSTM, CNNs, and linear connected layers**.
- Developed a **multi-modal deep learning model** for diet monitoring and calorie prediction, integrating Continuous Glucose Monitors (CGM), food images, demographics, physical attributes, and gut microbiome.
- Outperformed **benchmarks by 34%** in lunch calorie intake predictions, showcasing expertise in **multi-modal machine learning** and reaching strong model generalization.
- Calibrated model performance through systematic **hyperparameter tuning**, delivering validation loss of 0.83, **test loss of 0.34**.

HEALTH MONITORING AND HEART STROKE PREDICTION

Jan 2023 – Apr 2023

- Applied machine learning algorithms, including **Regression, Decision Trees, SVM, and Random Forest**, to analyze health data from Health Associations archives, Obtaining **high accuracy in cardiac disease prediction**.
- Integrated **IoT-enabled ESP8266** with pulse oximeters and blood pressure monitors to collect **real-time health data**. Trained and validated **predictive models** on authentic datasets, ensuring reliability in **cardiac event prediction**.

FACE TRACKING ROBOT

Jan 2023 – Apr 2023

- Structured a face-tracking robot with a pan-tilt mechanism powered by servos, enabling **two degrees of freedom** for precise face tracking using **Python-based computer vision algorithms**.
- Built a **4-wheeled mobile base** controlled via an Arduino module, allowing the robot to autonomously follow a person while maintaining consistent **face alignment and real-time tracking**.

LEADERSHIP

IEEE MTT'S [MICROWAVE THEORY AND TECHNIQUES SOCIETY]

Vellore, India

Co-Secretary

Jan 2023 – Dec 2023

- Led as **Co-Secretary** of IEEE MTT'S, managing and coordinating multiple events and seminars focused on emerging technologies.
- Organized and **executed activities** impacted the chapter's growth and development.
- Directed efforts to enhance chapter's outreach and impact through effective **event planning and execution**.

CERTIFICATIONS

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- **Supervised Machine Learning** by DeepLearning.AI and Stanford University- [Certification](#).