CHETAN SAI BORRA

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OBJECTIVE

Aspiring Robotics Intern with expertise in control systems, computer vision, and Reinforcement learning, driven to develop intelligent and autonomous robotic solutions.

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 INSTITUE 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**, R, **MATLAB**, Simulink, C++, Java, MySQL, Bash scripting.
Software & Tools: ROS 2, Gazebo, Jupyter Notebook, Fusion 360, Microsoft 365, Google Colab, VS Code, **Linux**, **CUDA**.
Machine Learning: Pytorch, TensorFlow, Keras, NumPy, Pandas, **Scikit-learn**, Matplotlib, Seaborn, **OpenCV**.

EXPERIENCE

VELLORE INSTITUE 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, achieving over **90% accuracy** and enhancing delineation of tumor regions.
- Maximized tumor boundary detection, attaining a high **Mean Intersection Over Union** (**Mean IOU of 80%)** 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, improving 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 a **10% improvement in system stability**.
- Deployed optimization strategies to refine system dynamics, effectively reducing overshot 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

MEAL NUTRITION ANALYSIS — Sep 2024 – Dec 2024

- Innovated a **multi-modal deep learning** model combining **LSTM, CNNs, and fully connected** layers for calorie prediction, leveraging data from CGMs, food images, demographics, physical attributes, and gut microbiome**.**
- Achieved a **30% improvement** over benchmarks in lunch calorie prediction through **advanced model optimization** and systematic **hyperparameter tuning**, demonstrating expertise in machine learning and real-time data processing.
- Structured a **robust predictive pipeline** with a **validation loss of 0.83 and test loss of 0.34**, showcasing strong generalization and applicability to robotics and autonomous systems.

IMAGE CLASSIFICATION USING DEIT WITH TRANSFER LEARNING — Dec 2024 – Jan 2025

- Advanced a **DeiT (Data-efficient Image Transformer)** model from scratch for 7-class image classification, **achieving 76% accuracy**, exceeding the 70% target using **CUDA for optimized GPU computation**.
- Boosted performance through **transfer learning** by freezing pre-trained **Vision Transformer** blocks and **fine-tuning layers** for multi-class building image classification.
- Leveraged Pytorch for **advanced computer vision** tasks, including image preprocessing, custom **Transformer block implementation**, and hyperparameter tuning, ensuring **robust model generalization**.

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 MTTS [MICROWAVE THEORY AND TECHNIQUES SOCIETY] — Vellore, India
Co-Secretary — Jan 2023 – Dec 2023

- Led as **Co-Secretary** of IEEE MTTS, managing and coordinating multiple events and seminars focused on emerging technologies.
- Directed efforts to enhance chapter's outreach and impact through effective **event planning and execution**.

CERTIFICATIONS

- **Supervised Machine Learning** by DeepLearning.AI and Stanford University- Certification.