Jyoshitha Madhavarapu

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EDUCATION

Texas A&M University **College Station, Texas**
Bachelor of Science in Computer Science , Minor in Statistics *May 2027*

- Craig and Galen Brown Engineering Honors, Grand Challenges Program Scholar, Dean's Honor Roll,
- **Relevant Courses**: Design and Analysis of Algorithms, Computational Data Science, Foundations of Software Engineering, **Computer Systems**, **Data Structures and Algorithms,** Computer Organization, Linear Algebra, C++ Programming

TECHNICAL SKILLS

Languages: Python, C++, Java, JavaScript, TypeScript, R, SQL, Haskell, HTML, CSS
Frameworks/Libraries: React, React Native, Node.js/Express, scikit-learn, PyTorch, Pandas, NumPy, OpenCV
Tools/Platforms: GitHub, Docker, PostgreSQL, Linux, SLURM, Conda, Firebase, Tesseract OCR, Figma, VS Code
Core Strengths: Machine Learning, Full-Stack Development, Computer Vision, HPC Workflows, REST APIs

PROFESSIONAL EXPERIENCE

Undergraduate Peer Teacher **August 2025 – Present**
Engineering Department at Texas A&M University *College Station, TX*

- Teach and mentor **100+ students in Python programming fundamentals**, algorithmic thinking, and structured problem solving.
- Lead Experimental Physics and Engineering Lab II, delivering interactive lectures, demonstrations, and hands-on lab activities.
- Support instruction by grading assignments, providing detailed feedback, and creating coding examples to reinforce course concepts.

Undergraduate Student Researcher **February 2025 – Present**
Protein & drug design with Machine Learning under CSCE Department *College Station, TX*

- Automated ProteinGym pipelines, cutting preprocessing time 40% and enabling reproducible ML across 50+ datasets.
- Reproduced **zero-shot mutation effect predictions** with ESM-2 and ESM-C, deploying workflows on **TAMU HPRC cluster** for high-throughput inference.
- Trained and fine-tuned **MLPs on ESM-2 embeddings**, boosting supervised mutation effect prediction accuracy by 12%.

Undergraduate Student Researcher **January 2025 – August 2025**
Computer Vision Research Assistant under Animal Science Department *College Station, TX*

- Conducted interdisciplinary research on AI-driven early detection of Bovine Respiratory Disease (BRD) using RGB and thermal imaging, **YOLOv5 object detection**, and **CLIP-based multimodal analysis** with multiple field trials.
- Achieved **99.5% mean Average Precision (mAP@0.5)** in real-time cattle detection with **instance segmentation**; improved model robustness through targeted error analysis on occlusion and background confusion. Presented findings at TAMU Student Research Week and **won 1st Place** in the Agriculture category.
- Leveraged Texas A&M's High Performance Research Computing **(HPRC) cluster** and **Docker** to run **large-scale ML workflows**, including automated ear tag detection and **unsupervised clustering pipelines** for animal tracking across video datasets.

PROJECTS

GirlBoss| Next.js, Node.js/Express, MongoDB, Databricks, Snowflake, Google Maps API (link) **November 2025**

- Built the end-to-end real-time Safety Score pipeline (Databricks + Snowflake), integrating crime data, lighting, weather, routing metadata, and device factors to generate dynamic pedestrian risk scores.
- Developed a responsive Next.js interface with map rendering, route overlays, chatbot features, and real-time safety-score visualization; project **won 1st Place** – Best Use of Snowflake and **2nd Place** – Best Use of Databricks at TAMU Datathon 2025.

SwipeTern | Expo, Figma, Firebase, React Native (link) **January 2024**

- Created an internship-matching app with a Tinder-style swipe interface, facilitating 50+ recruiter–student matches during TamuHack.
- Delivered a production-ready front end in React Native/Figma and implemented Firebase for secure login + profile management.

LEADERSHIP & INVOLVEMENT

Projects Officer (link) **May 2025 - Present**
Statistics Learning Society *College Station, TX*

- Designed and currently delivering a semester-long curriculum on **Python, R, and PostgreSQL** with weekly workshops on exploratory data analysis, **machine learning**, and **data wrangling** using tools like **Pandas**, **ggplot2**, and **scikit-learn.**
- Mentor 30+ students on final projects using **GitHub workflows,** Kaggle datasets, and **advanced SQL topics**, and build and maintain the SLS website using Next.js to centralize resources for 100+ members

Lead Programming Member and Historian (Design Notebook 1 | Design Notebook 2) **October 2023 - May 2025**
WIRED VEXU Robotics *College Station, TX*

- **Compiled multiple 75+ page Design Notebooks**, detailing the engineering process, design rationale, and iteration strategies.
- **Developed and optimized robot control software in C++**, contributing to autonomous and driver-assist functionality as a core programming team member.