Troy Dutton

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EDUCATION

THE UNIVERSITY OF TEXAS AT AUSTIN — Austin, TX
Bachelor of Science — May 2025
Electrical and Computer Engineering Honors
Cumulative GPA: 3.98
Relevant Coursework: OS; Algorithms; SWE Lab; Software Design & Implementation I/II; Probability; Matrices & Matrix Calc.

EXPERIENCE

THE UNIVERSITY OF TEXAS AT AUSTIN — Austin, TX
Computational Reconstruction Researcher — Aug 2023 – Present
- Developing a platform to evaluate the performance of low-cost imaging systems for use in computational microscopy.
- Exploring the integration of computer vision into algorithmic image reconstruction to enhance resolution and reduce noise.

APPLIED RESEARCH LABORATORIES — Austin, TX
Machine Learning Intern — Jun 2023 – Aug 2023
- Devised a model to generate pixel-wise annotations in sonar images of the seafloor for use in underwater mapping.
- Implemented an unsupervised, positive-pair training paradigm in PyTorch to eliminate the reliance on hand-labeled data.
- Benchmarked the proposed algorithm against pre-trained models and traditional texture-based segmentation techniques.

THE UNIVERSITY OF TEXAS AT AUSTIN — Austin, TX
Photonics Researcher — Aug 2022 – May 2023
- Created a system to characterize infrared detectors using a two-axis double lens setup in the Mid-IR Photonics Lab.
- Interfaced with motors and amplifiers in Python to perform a precise scan of a detector across a standardized sample.

THE UNIVERSITY OF HOUSTON — Houston, TX
Nanofabrication Researcher — May 2022 – Aug 2022
- Prototyped a device controlled by a custom LabVIEW GUI to evaluate the performance of a lateral flow assay biosensor.
- Automated testing using a linear actuator and 3D-printed parts to standardize and accelerate the data collection process.

PROJECTS

ASL IDENTIFIER (ASLI) — Oct 2022
- Designed a real-time sign-language recognition algorithm by training a model to classify ASL gestures based on hand landmarks.
- Enhanced model accuracy by extracting hand landmarks from standard ASL datasets using a pre-trained MediaPipe model.

CONWAY'S GAME OF LIFE — Feb 2022
- Trained an agent using Deep Q learning to compete in a competitive, two-player version of Conway's Game of Life.
- Formalized the rules of the game in a TensorFlow environment to enable the agent to be trained using reinforcement learning.

WORDLE SOLVER — May 2022
- Devised an algorithm rooted in information theory, which generates intelligent predictions by analyzing the user guess history.
- Calculated expected information for each guess based on the prob/entropy to select the optimal wordle guess.

TRAFFIC SIGN RECOGNITION — Sep 2021
- Trained a convolutional neural network to classify traffic signs from the German Traffic Sign Recognition Benchmark dataset.
- Optimized model performance by selecting and configuring a CNN architecture and systematically fine-tuning hyperparameters.

SIDE VIEW MIRROR — May 2020
- Prototyped a system to automatically detect and remove rainwater from a side-view mirror using pressurized air.
- Interfaced with infrared emitters and receivers using a C++ program to detect water droplets on the mirror surface.
- Received the Alumni Club of MIT: Best Project in Engineering award at the Science and Engineering Fair of Houston.

SKILLS & INTERESTS

Technical Skills: Python (Pytorch, TensorFlow, Tensorboard), C, C++, Java, LabVIEW, Linux, Git, ARM Assembly.
Organizations: Tau Beta Pi, Machine Learning and Data Science Club, IEEE UT