MATTHEW H. TAYLOR

mht3.github.io

Research Focus: AI for science applications related to deep learning and reinforcement learning.

EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO — **SEP. 2023 – JUNE 2025**
- MS in Computer Science and Engineering — *GPA: 4.0 / 4.0*

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN — **AUG. 2019 - MAY 2023**
- Bachelor of Science in Aerospace Engineering — *GPA: 3.93 / 4.00*
- Highest Honors, Minor in Computer Science

SKILLS

- Python
- C/C++
- Java
- PyTorch
- Git
- Unix
- Scikit-learn
- Tensorflow

WORK EXPERIENCE

UC San Diego, *Teaching Assistant: Intro to Programming (CSE 8A)* **JAN. 2024 - MARCH 2024**
- Led discussion sections and office hours for a class of ~300 students.
- Created homework and quiz assignments to enrich student learning objectives.

Dolby Laboratories*, Computer Vision/ML Engineer Intern* **JUNE 2023 - AUG. 2023**
- Profiled video content using skin segmentation, noise, face, and text detection models to give suggestions for when to use precision detail, a local image adjustment algorithm created for Dolby Vision.
- Updated Dolby Vision's internal C++ to Python bridge by adding hooks for local enhancement parameters.
- Produced a modular PyQt GUI to visualize content mapped Dolby Vision content combined with model outputs. The modularity allows for new models to be used if a faster or more accurate algorithm is found.

Maxar Technologies*, Research and Development Intern* **MAY 2022 - AUG. 2022**
- Applied deep learning and semantic segmentation methods to detect building footprints from Maxar satellite imagery using PyTorch Lightning for training and TensorBoard for model evaluation and visualizations.
- Researched how the addition of the near infra-red band (NIR) improves segmentation performance.
- Developed model agnostic visualizations in TensorBoard for the R&D Lab's custom training framework.

TECHNICAL EXPERIENCE

Graduate Student Researcher*, Advisor: Professor Sicun Gao* **MARCH 2024 – PRESENT**
- Improving learning-based design for better control of nuclear fusion.

Undergraduate Researcher*, Robotics/Human-Agent Teaming* **MAY 2021 – MAY 2023**
- Created a CNN to detect objects and transform a robot's camera view into a top-down grid world in simulation and the real-world using the NVIDIA JetBot AI kit. Controlled the robot in simulation using Gazebo and ROS.
- Explored useful applications for brain computer interfaces and human-agent teaming, applying machine learning algorithms to EEG data to improve a human-agent collaborative environment.
- Created an experiment with multiple participants and developed a multiclass SVM to classify LEDs flashing at different frequencies using steady-state visual-evoked potentials (SSVEP).

Undergraduate Researcher, *Telecommunications* **JAN. 2021 - MAY 2021**
- Created a remote controller that utilizes the MQTT protocol with open-source libraries in Python.
- Simulated the control of a vehicle with a joystick (ground station) GUI and a vehicle GUI.

ACM*, NFL Kaggle Project Team Lead* **AUG. 2021 - JAN. 2022**
- Led a team in the NFL Big Data Bowl 2022 Kaggle competition, producing and analyzing a new metric called kicker excellence rating (KER) based off data from previous NFL seasons.
- Delegated tasks to team members wrote a report outlining the teams' design, algorithm, and methodology.

RELEVANT COUSEWORK

- Search and Optimization
- Deep Learning - 3D Data
- Machine Learning
- Algorithms
- Probability and Statistics
- Introduction to Robotics