Manassas, VA
(540) 216-8244
mattluutrang@vt.edu

Matthew Trang

Machine Learning Engineer

Portfolio: trangml.com
github.com/trangml
linkedin.com/in/matthew-trang

Skills

Languages	Python, C++, Java, Javascript, MATLAB/Simulink, LaTeX, C, C#, Bash, Lua
Programming Tools	PyTorch, Tensorflow, Stable Baselines3, RLLib, OpenCV, Qt, Pandas, Scikit-Learn, Weights & Biases
Engineering Tools	ROS, Git, Subversion, Docker, Linux, Android, AutoDesk Inventor, Blender, AutoCAD, QNX

Technical Experience

Machine Learning Engineer / DARPA ACE, Gamebreaker, etc. **Dec 2019 — Aug 2022**
Heron Systems *Alexandria, VA*

- Trained RL agents, devised novel reward schemes, and implemented state of the art RL algorithms for government defense contracts advancing transfer learning, trustworthy AI, and complex control systems
- Bootstrapped RL Testing Environment for creating low-to-high fidelity generalized transfer learning algorithms to provide five different testing environments with configurable difficulties
- Coded custom Machine Learning neural network modules for validating game balance for DARPA Gamebreaker, generating a 90% accurate win probability classifier for Starcraft II with interactive React JS dashboard

Reinforcement Learning Researcher / M.S. Computer Engineering **Dec 2021 — Present**
Virginia Tech *Blacksburg, VA*

- Research Multi-Task Reinforcement Learning for Single-Agent and Multi-Agent drones to study the impact of incremental learning and catastrophic forgetting on complex navigational tasks
- Develop simulation environments and algorithm for regularized incremental learning with second-order approximation which outperformed normal incremental learning by 33%

Senior Design Team Member / PowerHAUS **Feb 2021 — Dec 2021**
Virginia Tech *Blacksburg, VA*

- Designed Tensorflow2 object detection image classifier and AR mobile app for monitoring smart devices with a limited dataset
- Validated safety and functionality of power electronics cartridge consisting of high-voltage systems for Dubai Expo 2022

Perception Team Member / Victor Tango AutoDrive **Nov 2018 — Sep 2020**
Virginia Tech *Blacksburg, VA*

- Collaborated with 30+ team members on cross-discipline team to design a fully-autonomous self-driving vehicle as part of the SAE AutoDrive challenge
- Utilized Lidar data and point cloud mapping techniques to create a function for stop sign detection using ROS, QNX, and MATLAB
- Integrated localization and precision IMU sensor with communication network to control vehicle steering, braking, and torque

Embedded UAV Software Engineering SEPP Intern / Software Systems Group **May 2020 — Aug 2020**
Collins Aerospace *Sterling, VA*

- Programmed multi-camera visual navigation pipeline for a GPS-denied UAV using MATLAB Simulink and C++ on Jetson TX2
- Collaborated remotely with team of two fellow interns to demonstrate vision-based autonomous landing with fiducial markers

Education

Master of Science in Computer Engineering, *Virginia Tech* Expected Grad Dec 2022
GPA: 3.88

Bachelor of Science in Machine Learning, Minors in Computer Science, Mathematics, *Virginia Tech* Dec 2021
GPA: 3.95

Patents

Non-invasive wearable biomechanical and physiology monitor for injury prevention and rehabilitation — US11284838B2
George Mason Research Foundation, Filed Oct 2017, Granted Mar 2022

Artificial cognitive declarative-based memory model to dynamically store, retrieve, and recall data derived from aggregate datasets — US20180240015A1
Scriyb LLC, Filed Feb 2017

Awards/Activities

IEEExp Virtual Session Presenter, IEEE@VT	Sep 2021
1st Place, DARPA AlphaDogfight Trials, Heron Systems	Aug 2020
1st Place, National SourceAmerica Design Challenge, SourceAmerica	Jun 2019
Pamplin Scholar Award, Virginia Tech, Full-Tuition Scholarship	Mar 2019
Valedictorian, Patriot High School, 4.909/4 GPA	Jun 2018