Ryan David Melzer

Tucson, AZ | rdmelzer@email.arizona.edu | (520) 551 8039 | linkedin.com/in/ryan-david-melzer

Education

The University of Arizona, Tucson AZ
M.S. in Computer Science, emphasis in Machine Learning. **Expected graduation**: *December 2020* (4.0/4.0 GPA)
B.S. in Computer Science, B.S. in Mathematics, *May 2017* (4.0/4.0 major GPA)
Awards: Outstanding Senior in Computer Science (nominated)

Experience

Graduate Research Assistant - The University of Arizona Department of Computer Science. Tucson, AZ *2019-2020*
- Developed and implemented deep policy gradient models for spacecraft and aircraft control.
- Developed an ultra-fast unsupervised learning algorithm for outlier detection in streaming astronomical data.
- Developed deep learning models and pattern recognition algorithms for music generation.

Research Intern - Sandia National Laboratories. Albuquerque, NM *Summer 2019, Summer 2020, Fall 2020*
- Developed and implemented deep learning models for pose estimation and object recognition to run onboard autonomous flight platforms using synthetic aperture radar.
- Implemented a wide variety of deep learning models for target recognition in synthetic aperture radar imagery several of which exceeded current state-of-the-art accuracy.
- Implemented explainability algorithms for deep neural networks.
- Developed deep models and utilized neural architecture search for domain adaptation between generated and real radar imagery.

Software Engineer I - Optiver. Chicago, IL *June 2017 - April 2018*
- Built a real-time post-trade analysis tool to analyze the behavior of a new automated trading strategy. This tool allowed the company to test and deploy the strategy at scale safely.
- Implemented and deployed an ultra-fast high-frequency trading application on an unsupported exchange. Extended an in-house end-to-end testing framework to cover both the new application and the exchange.
- Discovered a use-case for a new microsecond time-scale trading strategy through examining individual packets sent over an exchanges' UDP broadcast. Implemented and tested this strategy in an existing trading application.
- Implemented, tested, and deployed a safety mechanism across the entire trading system to prevent automated trades outside of algorithmically predetermined price limits.

Software Engineering Intern - Optiver. Chicago, IL *Summer 2016*
- Built a server to simulate changes in option prices from a pricing model using forecasted market fluctuations and changes in pricing model parameters. This server computed large matrix operations in parallel for thousands of options and broadcasted the results on a local UDP network.
- Developed a server for real-time monitoring of work queues in the data collection system. The server was able to easily identify bottlenecks across each component of this system in real-time.

Research Intern - Rincon Research Corporation. Tucson, AZ *Summer 2015*
- Developed and deployed a geolocation algorithm used onboard autonomous drone clusters.

Teaching Assistant - The University of Arizona Department of Computer Science. Tucson, AZ *2015, 2016, 2018*

Skills

Python, C/C++, Linux shell, C#, Java, PyTorch, scikit-learn, OpenCV, Deep Learning, Computer Vision, Deep Reinforcement Learning, Machine Learning

Interests

- Lead guitarist, founding member, and composer for a regionally successful band. Produced multiple records and performed across the southwestern United States.
- Independent electronic music producer.