Ryan David Melzer

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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)

Skills

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

Experience

Research Intern - Sandia National Laboratories. Albuquerque, NM *Summer 2019, Summer 2020, Fall 2020*

- Developed and implemented deep neural network models for pose estimation and object detection to run onboard autonomous flight platforms using synthetic aperture radar.
- Implemented a wide variety of deep neural network models for automatic 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 neural network models and utilized neural architecture search for domain adaptation between generated and real radar imagery.

Graduate Research Assistant - The University of Arizona Department of Computer Science. Tucson, AZ *Jan 2019-*

- Developed and implemented deep policy gradient models for spacecraft and aircraft control.
- Developed and implemented an ultra-fast unsupervised learning algorithm for outlier detection in streaming astronomical data from a high throughput telescope.
- Developed deep neural network models and pattern recognition algorithms for music generation.

Software Engineer I - Optiver. Chicago, IL *Jun 2017 - Apr 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 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 that collected real-time monitoring statistics of work queues in the data collection system. The server was able to easily identify bottlenecks across each component of the 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*

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.