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, May 2017 (4.0/4.0 major GPA)
B.S. in Mathematics, May 2017
Awards: Outstanding Senior in Computer Science (nominated)

Experience

Graduate Research Assistant in Computer Science - The University of Arizona. Tucson, AZ 2019 - 2020

- Developed an ultra-fast unsupervised learning algorithm for outlier detection in streaming astronomical data from the Large Synoptic Survey Telescope. (Python, C++, scikit-learn, mlpack)
- Developed deep learning models and pattern recognition algorithms for music generation. (Python, PyTorch)

Autonomy Research Intern - Sandia National Laboratories. Albuquerque, NM Summer 2019

- Developed deep learning models for pose estimation and object recognition to run onboard autonomous flight platforms using synthetic aperture radar. Utilized state of the art convolutional neural network architectures, meta-learning techniques, and image processing techniques. (Python, PyTorch, OpenCV, scikit-learn)
- Designed a perception system for navigation and object detection on custom quadcopters. (Python, C++, ROS)

Software Engineer I - Optiver. Chicago, IL 2017 - 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. (C#, Python)
- 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. (C++, Python, Ruby)
- 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. (C, C++)
- Implemented, tested, and deployed a safety mechanism across the entire trading system to prevent automated trades outside of algorithmically determined price limits. (C, C++, Java, Python, Ruby, Unix)

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. (C#)
- 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. (C#)

Research Intern - Rincon Research Corporation. Tucson, AZ Summer 2015

Developed and implemented a geolocation algorithm for autonomous drone clusters. Built an onboard radio system for target detection and geolocation which interfaced drone control APIs with drone autopilot software and software-defined radios to locate, fly to, and photograph an unknown target using this algorithm. (Python, C++, Unix)

Teaching Assistant - The University of Arizona Department of Computer Science. Tucson, AZ

Four semesters as a teaching assistant for the Department of Computer Science. Classes: Automata, Grammars, and Languages, Software Development in C++, Analysis of Discrete Structures, and Introduction to Computer Science II.

Skills

Python, C/C++, Bash, C#, Java, JavaScript, HTML, CSS, MATLAB, Git, PyTorch, scikit-learn, OpenCV

Achievements

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