Ryan David Melzer

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

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

Graduate coursework: Machine Learning Theory, Probabilistic Graphical Models, Algorithms for Natural Language Processing, Computer Vision, Neural Networks, Advanced Operating Systems, Human-Computer Interaction, Online Learning and Multi-Armed Bandits

Experience

Graduate Research Assistant - The University of Arizona. Tucson, AZ — Spring 2019 - Present

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

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 and built a perception system for navigation and object detection to run on custom quadcopters. (C++, Python, PyTorch, OpenCV, scikit-learn, Linux, ROS)

Software Engineer I - Optiver. Chicago, IL — July 2017 - May 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 an ultra-fast high-frequency trading application on an unsupported exchange. (C++, Unix)
- Discovered a use-case for a new microsecond time-scale trading strategy. Implemented this in an existing trading application. (C, C++, Unix)
- Extended an in-house end-to-end testing framework to cover new trading applications, features, trading strategies, and exchanges. (Python, Ruby, Unix)
- Implemented support across all trading applications for a new trading safety mechanism. (C, C++, Java, 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 Engineering Intern - Rincon Research Corporation. Tucson, AZ — Summer 2015

- Developed a geolocation algorithm used by autonomous multi-copter drone clusters. Built an onboard radio system for target detection and location 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, Introduction to Computer Science II.

Skills

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

Other Accomplishments: Lead guitarist, founding member, and composer for a regionally successful band. Produced multiple records and performed across the southwestern United States.