Matthew Strong

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ENGINEERING EXPERIENCE

Software Engineer Intern, Broomfield CO — ***Microsoft***

May 2020 - August 2020

- Implemented and deployed a feature from scratch called **journey optimization**, which intelligently guides customers on the customer journey, using reinforcement learning.
- Worked with researchers and the AI team to architect the system.

Undergraduate Researcher, Boulder CO — ***HIRO Robotics Group***

Sep 2019 - Present

- Currently developing control software and optimization methods with the Franka Emika Panda (a 7-DoF robotic arm) for a flexible, artificial skin with embedded sensors.
- Working on Hierarchical Reinforcement Learning applied to complex robotic control tasks.

Software Engineer Intern, Redmond WA — ***Microsoft***

May 2019 - August 2019

- Developed and deployed Global Search for Dynamics 365 For Talent.
- Implemented an end-to-end feature with Angular (frontend), C#, and XML.

Co-Founder and CTO, Boulder CO — ***Udana Systems***

February 2018 - June 2020

- Served as the chief engineer for developing an autonomous drone delivery system. Used ROS, PyTorch, C++, and Python.
- Architected a ML development pipeline for drone computer vision using state of the art CNN models such as YoloV3 and Mask RCNN.

EDUCATION

University of Colorado Boulder — Computer Science, *BS*

August 2017 - May 2021

4.0 Cumulative GPA, College of Engineering Research Award

Relevant Coursework: Advanced Robotics, Advanced Data Science, Algorithms, Data Structures, Operating Systems, Computer Systems

Skills

Languages: Python, C++, C#, C, Javascript, Typescript, HTML, CSS

Frameworks: Django, Vue.js, Angular, React, Flutter, ASP.Net MVC

Misc: ROS, Pytorch, Tensorflow, Keras, Reinforcement Learning

PROJECTS

Mamba Music
Group Project

Python, Tensorflow, React, AWS Lambda

Created an integrated music generation platform with Tensorflow Magenta. Included 7 different models for customized music generation from a variety of genres. Constructed an automatic pipeline for generating songs on Google Cloud GPU-based VMs.

ArduCopter Teleoperations,
Personal Project

C++, ROS, ArduCopter, MAVROS

Developed a user-controlled system with ROS for ArduCopter. Tested both in simulation (Microsoft Airsim) and a real drone created from scratch.

Dronet PyTorch,
Personal Project

Python, Pytorch

Implemented a convolutional neural network and training pipeline in PyTorch called Dronet (DroNet: Learning to Fly by Driving).

Bebop Autonomy Vision,
Group Project

ROS, Python, Pytorch, TensorRT

An autonomous drone (Bebop) using CNN-based navigation with Dronet and includes optimized object detection, semantic segmentation, and visual odometry (SVO).