Carson Schubert

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EDUCATION

The University of Texas at Austin **B.S Electrical and Computer Engineering** (GPA: 3.90) **Dec 2020**
Focus: Communications, Signal Processing, Networks and Systems / Data Science and Information Processing
Relevant Coursework: Linear Systems and Signals, Algorithms, Embedded Systems, Circuit Theory

RELEVANT EXPERIENCE

NASA Glenn Research Center | **Research Intern** | *Cleveland, OH* Aug 2018 – Dec 2018

- Developed a reinforcement learning algorithm (agent) to run onboard an orbiting satellite which optimizes data downlink autonomously to maximize data throughput and reduce human interaction
- Repurposed existing simulation tools written in MATLAB to generate realistic training episodes quickly
- Wrote an OpenAI Gym environment in Python to facilitate the use of training episodes and provide agent rewards
- Trained a neural network inside this simulation environment using PyTorch to approximate agent's policy
- First author on a soon to be published NASA TM and CCAA Workshop paper covering the results of this research

Texas Spacecraft Laboratory | **Seeker Vision Flight Software Lead** | *Austin, TX* Sep 2017 – May 2018

- Developed a novel visual navigation system capable of running onboard NASA JSC's Seeker CubeSat Mission
- Aided in development of a convolutional neural network for target identification using Google's TensorFlow
- Designed flight software in C to handle boot sequence and communications and facilitate vision algorithms
- Implemented two tier process monitoring between Bash, C, and Python resulting in zero crashes during testing
- Wrote a custom suite of bash scripts to characterize performance onboard target hardware
- Created technical documents detailing setup of mission hardware/testing procedures to simplify integration
- Final system launched on Cygnus NG-11 in April 2019 over competing solutions due to reliability when integrated

Nate Controls | **Cloud Engineering Intern** | *Austin, TX* Jun 2018 – Aug 2018

- Developed an application to connect any number of IOT devices to a wireless access point via a captive portal
- Designed and wrote a new device backend from scratch in Typescript using AWS Lambda, DynamoDB, and S3
- Implemented an automated testing workflow using Jest for use on all future Typescript applications

Jet Propulsion Laboratory | **Mission Simulation Intern** | *Pasadena, CA* May 2019 – Aug 2019

- Improving simulation infrastructure to support mission planning on Europa Clipper

PROJECTS

RPILED | *bit.ly/RPILED* Jun 2018 – Present

- Full stack web application for controlling digital LED lights via Raspberry Pi running balenaOS
- Uses NodeJS, Express, and SQLite to expose a RESTful API for LED control
- Externally hosted, mobile friendly Vue frontend allows for customizing animations/colors and saving favorites

ravenML | *bit.ly/ravenML* Feb 2019 – Present

- Open-source Python CLI tool for rapidly training machine learning models
- Hooks into AWS S3 to easily download datasets and upload trained models
- Leverages a training plugin architecture for unlimited extensibility based upon core functionality

SKILLS

Programming Languages: C, C++, Python, Java, Javascript, Typescript, Bash, MATLAB
Technologies: Git, Unix, ROS, Docker, AWS, NodeJS, Gitlab CI
Libraries: NumPy, PyTorch, OpenCV, Click

ACTIVITIES/HONORS

Student Engineering Council, University of Texas at Austin Sep 2017 – Present
1st Place, NASA International SpaceApps Hackathon, Cleveland Event Oct 2018