Jacob Knaup

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Summary

Robotics Engineering senior with experience programming and testing robotic systems in an academic research setting, seeking an entry-level position starting May of 2019 in robotics, machine vision, and AI.

Education

Bachelor of Science in Engineering, Robotics Engineering *Expected: May 2019*
Arizona State University, Mesa, AZ *GPA: 4.0*
Barrett, The Honors College

Technical Work Experience

Benchmark Electronics Inc.—Software Engineering Intern *May 2018-Present*

- Implemented MQTT communication for IoT platform in Python and JavaScript
- Integrated local IoT data services with AWS and Microsoft Azure cloud storage
- Redesigned gateway stack to use multithreading, improving performance & modularity
- Upgrade ultra-wideband messaging MAC in embedded C to increase number of supported nodes
- Planned, executed, and tracked agile development sprints and issues using Git and JIRA

ASU Integrated Design, Engineering, & Analysis Lab *December 2016-Present*

- Developed and tested robotic mechanism position and force control software written in C
- Optimized systems using simulations written in Python, MATLAB, and C# and employed Git VCS
- Devised test setups, performed experiments, and analyzed results using Python and MATLAB
- Documented and presented simulation and software validation results orally, visually, and in writing
- Communicated research progress and outcomes to nontechnical individuals in funding proposals

Academic Projects

Robotic Systems Pick and Place Manipulator *Fall 2017-Spring 2018*

- Programmed color subtraction and image segmentation algorithms using OpenCV with Python
- Tested, debugged, and improved object detection algorithm performance and repeatability
- Formulated and simulated depth-first and A* artificial intelligence algorithms with Numpy in Python
- Implemented deep learning neural network in Python to perform object sorting
- Programmed manipulator in C to move to specified coordinates using inverse kinematics algorithm

Embedded Systems Design Project *Fall 2017-Spring 2018*

- Architected embedded system firmware using a state chart and programmed system in C
- Tested and debugged electrical hardware and software systems using benchtop electrical tools
- Integrated physical electro-mechanical hardware with software in an interdisciplinary team
- Communicated project requirements, features, and technical details during design review

VEXU Robotics Competition *Fall 2015-Spring 2018*

- Programmed Linux computer running to perform object recognition using OpenCV and Python
- Programmed autonomous robots using object oriented, real time, parallel programming (C++)

Technical Skills

Programming (C, C++, C#, Python, MATLAB), Git, Linux, OpenCV, ROS, AI, Microsoft Office, CAD (Solidworks)