**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)