**Jacob Knaup**

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**Summary**

Robotics Engineering junior with experience programming and testing robotic systems in an academic research setting, seeking an internship for the summer of 2018 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 Experience**

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-Present*

* 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 ROS using Python to perform object sorting
* Programmed manipulator in C to move to specified coordinates using inverse kinematics algorithm

Embedded Systems Design Project *Fall 2017*

* 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-Present*

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

Laser Tag Robots Project *Spring 2017*

* Programmed application in Java to control and receive feedback from mobile robots over Bluetooth

**Other Experience**

ASU University Academic Success Programs *January 2016-Present*

* Communicated calculus and physics concepts to students while leading review sessions

STAX 3D Printing, Gilbert, AZ *February 2016-February 2017*

* Collaborated with R&D team to develop educational products, workshops, and materials

Barrett Honors Writing Colloquium *August 2016-Present*

* Communicated recommendations to improve students’ writing during tutoring sessions

**Technical Skills**

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