Jacob Knaup

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935 Stewart Dr.

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Dear Hiring Professionals:

I am a Robotics Engineering student at Arizona State University’s Fulton Schools of Engineering interested in programming and testing robotic systems, especially those utilized by the aerospace and national defense industries. As such, I am particularly interested in working for your robotics development group in Huntsville, AL to research, develop, and test autonomous vehicle navigation systems. My experience writing programs to model systems, collect sensor data, and perform experiments will make me a valuable addition to your team. I am eager to gain more experience developing algorithms with Leidos to solve the toughest challenges relating to programming, modeling, and testing of robotic systems and look forward to speaking with you about your internship opening.

I have a passion for simulating robotic systems and it has become the main focus of my ongoing academic research in ASU’s Integrated Design, Engineering, and Analysis Lab. I am currently working on a project to design a low-cost robot capable of dynamic, terrestrial locomotion. As part of this project, I am comparing the fidelity of an analytical model created in Python with a computational model created in the game engine Unity 3D. I have run simulations with both models to determine the optimal leg characteristics, and recently completed manufacturing and testing those leg designs. I am currently in the process of analyzing the experimental results using Python, so they may be compared with the theoretical results from the two models. Thanks to this experience, I will enter your division with valuable experience in simulating and testing robotic systems and I am very interested in learning more about your work with SLAM for use in autonomous navigation.

Through academic projects and competitive robotics, I have applied my programming knowledge to develop robot control and sensing solutions. For example, in my robotics systems class last semester, I wrote background and color subtraction algorithms using OpenCV and used them to send coordinates of a target object to a pick and place manipulator’s microcontroller. The pick and place manipulator was programmed in C and used inverse kinematics to move to the specified coordinates. I then built on this project and used a Linux system running ROS to locate and track an object using OpenCV’s feature detection and object tracking libraries. These have been two of my favorite projects and I look forward to experiencing your advanced research with machine vision.

I am available starting the second week of May through the third week of August this summer. I am happy to relocate to Huntsville, AL for the summer. Early afternoons Monday through Friday are the best times to contact me. Thank you for your consideration.

Sincerely,

Jacob Knaup