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Southwest Research Institute
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Dear Mr. Korn and Dr. Brooks:

I recently had the pleasure of interviewing with you on Thursday after Arizona State University's Fulton Schools of Engineering career fair. I wanted to thank you for your time and summarize some of my interests and experience in writing. I am a Robotics Engineering student, and I am particularly interested in working with your Intelligent Systems Division as a Student Engineer in San Antonio to research, develop, and test industrial robots. My knowledge of using programming to model dynamic systems, collect sensor data, perform experiments, and control robots will make me a valuable addition to your team. I am eager to gain more experience testing and debugging robotic systems with Southwest Research Institute to solve the toughest challenges facing the development of robotics.

I have a passion for simulating robotic systems and it has become the main focus of my ongoing work as an Undergraduate Researcher in ASU's Integrated Design, Engineering, and Analysis Lab. I am currently working on a project to design a low-cost, bio-inspired 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 have completed manufacturing and testing those leg designs. I recently finished the process of comparing the experimental results with the theoretical results from the two models and am currently writing a conference paper on my findings. I will enter your division with research experience designing, modeling and testing mechanical and software systems and I am very interested in learning more about your use of ROS-I for simulating and controlling industrial robots.

Through academic projects and competitive robotics, I have applied my programming knowledge to develop robot control and sensing solutions. 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 robot 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 object detection libraries. This semester, I am learning to apply artificial intelligence to robotic controls and perception. I look forward to learning more about the applications of these tools towards industrial robotics.

I hope that these snapshots of my interests and past projects give you an idea of how I might collaborate fruitfully with your engineering team. The best way to reach me is by email at jknaup@asu.edu, or I am available for a conversation by phone at 480-323-5061. I would be delighted to speak further with you about this opportunity. Thank you for your consideration.

Sincerely,



Jacob Knaup