Shaun **FEDRICK**
Physics / Mechanical Engineer | Student
linkedin.com/in/sfedrick +1 954 440 8279 sfedrick@haverford.edu
Miami, Florida U.S. Citizen

Hiring manager,

I am writing to express my interest in the Autonomous Driving Simulation Engineer - Managed AI role at Deloitte . With a background in physics, a Master's degree in Mechanical Engineering with a concentration in Mechatronics and Robotic Systems, and experience in robotic software development, I am confident that I am the ideal candidate for this position.

With regard to my ability to meet the specific requirements of this job :

Robot Frameworks

My experience includes working as a mechatronics engineer at ASML, where I am responsible for designing and implementing control algorithms for robotic systems, developing software for autonomous robots, and collaborating with cross-functional teams to ensure the successful integration of hardware and software. Through both my professional and academic career I have become proficient at various robot frameworks and tech stacks such as ROS,Gazebo, pytorch, tensor flow, and many more. Please go to my website "www.shaunfedrick.com" to get a more thorough explanation of projects I've done that have utilized such frameworks.

Controls and motion planning

As a Mechatronics engineer at ASML I am responsible for the Design and development of custom mechatronics systems within a cross sectoral team, including translating stages, rotary motion, multi-link positioners, sensors, servos, actuators, etc. This includes the design of path optimization algorithms and associated controls for end product as well as the integration of control systems for industrial robotics into capital equipment. Such work includes all aspects such as dynamics, end-effector design, controls, optimal controls etc.

Coding and Algorithm design

I have done a plethora of projects that have required an intense degree of coding.Currently, I work to implement robotic software and functional changes onto a 6 dof precision robotic stage. This involves writing software in matlab, python and C++ to simulate, analyze, and control a 6dof robot. I then implement the function onto the fleet within a cross sectoral team. I also developed a controller on bare metal to add directionality to an origami robot as a graduate student researcher see DOI:10.1109/ICRA40945.2020.9196534 for more information. For my thesis on lubrication forces, I used Open CV to write image processing scripts that tracked the position of a falling sphere and simultaneously pulled velocity and acceleration to analyze forces on the sphere. I have also taken a plethora of programming classes. To name a few of the classes, I have taken classes on Computational physics, Robotic planning, computational linear algebra, non linear and optimal controls, machine learning (i.e neural networks, decision trees, deep learning, CNN, RNN, GMM), and various foundational object oriented programming techniques. I am proficient in Python, C++, and matlab.

Thank you for considering my application. I look forward to the opportunity to discuss my qualifications further.

Thank you for your time,
Shaun Fedrick