Joshua Cox

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Education

University of Illinois Urbana-Champaign   GPA: 3.63 / 4
    Bachelor of Science, Mechanical Engineering w/ Minor, Computer Science   Expected: 12 / 2022
    Honors: Grainger College of Engineering Merit-Based Scholarships, Spring 2019 Dean's List, Eagle Scout

Work Experience

Mechanical Engineer Intern | Woodward, Inc. | Machesney Park, IL   *June 2021 – August 2021*
- Formulated internal investigation on failing components by coordinating with technicians, reviewing engineering requirements, and compiling information into a report in order to increase first pass yield
- Verified new method of manufacturing air valve seals by performing temperature experiments and documenting data and process changes, which increased production by 400%
- Developed an efficient webtool from scratch to track status of internal investigations and department item defects that helped managers close out issue tickets faster
- Defined proposal and procedure forms for vibration testing of actuators by analyzing the company's experimental capabilities and the respective customer requirements

Mechanical Engineer Intern | Valmet | Beloit, WI   *June 2019 – August 2019*
- Constructed job instructions to execute tasks by communicating with machine technicians, photographing relevant steps, and writing succinct and accurate directions
- Established Microsoft Excel macro to improve the processing of sensor data, which decreased operator error
- Streamlined manufacturing process for suction roll product by composing detailed job instruction and clarifying construction steps, decreasing various customer lead times

Project Experience

Walker Project   *August 2021 – December 2021*
- Designed robotic walker with four-bar linkages and cam-driven legs utilizing Creo Parametric's mechanical simulation capabilities
- Fabricated and tested press-fit joints to ensure rigid attachment between driven shafts and legs by rapidly iterating 3D-printed parts
- Integrated 3D-printed, laser-cut, and press-fit components into final robotic walker assembly
- Finalized design, test, and assembly two weeks ahead of initially proposed timeline and 11% under budget

Spaceshot Rocketry Team   *August 2021 – Present*
- Collaborated with student avionics sub-team to develop space-bound rocket over the next two years
- Assembled and tested active roll control systems composed of rack-and-pinion servo motors, ensuring adequate clearances required during flight operation
- Advanced on-board embedded system that saves sensor data and adjusts servos in response to active control algorithm utilizing C++ and pair-programming
- Validated new avionics stack performance onboard test rocket, which successfully guided rocket to 10,000 feet, deployed control flaps when necessary, and recorded flight telemetry for future analysis

NASA Student Launch Competition Team   *October 2019 – May 2020*
- Developed a custom deployable autonomous drone system that would launch mid-flight off a high-powered rocket, including research of computer vision and simulation solutions
- Performed software-in-the-loop trials in Gazebo to test flight software reliability

NASA Micro-g Neutral Buoyancy Experiment Design Team   *August 2019 – June 2020*
- Designed astronaut tool tolerant of operating with regolith dust dto collect lunar rock samples
- Composed and arranged sections of technical papers describing our team's tool and task plan
- Built and tested low-fidelity prototype to assess possible assembly schemes
- Established test protocols and procedures to NASA standards in order to validate tool effectiveness in the Neutral Buoyancy Lab (NBL)

Skills

- Programming: C++, Python, Java, C#, Microsoft VBA
- Software: Creo Parametric, Fusion 360, Gazebo Simulation, ROS, Excel, LaTeX, Android Studio