Nathan Justus, Ph.D.

Roboticist   DrJust.us   501-554-4553   nathantjustus@gmail.com

Education

2020 – 2024   **Ph.D., Robotics - Oregon State University**, Corvallis OR
Laboratory for Robotics and Applied Mechanics
Thesis Title: *The Geometry of Passive and Constrained Locomotion.*

2018 – 2020   **M.Sc., Robotics - Oregon State University**, Corvallis OR
Laboratory for Robotics and Applied Mechanics
Thesis Title: *Validation of a Novel Stereo Vibrometry Technique for Spiderweb Signal Analysis*

2012 – 2016   **B.Sc., Aerospace Engineering - University of Oklahoma**, Norman OK

Work History

2018 – 2024   **Ph.D. Research Assistant - Oregon State University**, Corvallis OR
Laboratory for Robotics and Applied Mechanics
- Developed embedded software and realtime motion controls for mobile robots
- Implemented geometric algorithms to model and optimize the dynamics of robot motion
- Automated stereo computer vision techniques for three-dimensional vibration sensing
- Led nationwide collaborations to ensure timely delivery of test data and research reports

2016 – 2018   **ISS Flight Controller - NASA - Johnson Space Center**, Houston TX
Mission Control for the International Space Station
Communications RF On-board Networks Utilization Specialist (CRONUS)
- Commanded recovery of mission-threatening processor failures using realtime telemetry
- Tested and deployed command automation software on the ground and onboard the ISS
- Maintained efficient engineering communication during complex mission challenges

2014 – 2015   **Aerospace Engineer Intern - Tinker Air Force Base**, Oklahoma City OK
Maintenance Engineering for the Pratt & Whitney F100 Jet Engine
- Automated engine performance analysis for the F15 and F16 supersonic fighter jets
- Analyzed and categorized post-catastrophe engine data to troubleshoot aircraft failures
- Worked part procurement for engine repair and maintenance

Projects

Rover   Founded and was chief engineer for a team that won a NASA rover design challenge

SCRAM   Led motion optimization for a nationwide collaboration studying dynamic mobile robots

Spiderharp   Deployed and maintained a large musical robotic spiderweb that is played like a harp

Key Skills

Software   MatLab, Python, C, C++, Perl, Linux

Automation   Software design, embedded systems, mechanical analysis, dynamic simulation, model identification, motion optimization, kinematics and dynamics, control systems, CAD

Mathematics   Geometric mechanics, differential geometry, stochastic models, nonlinear controls

Technologies   ROS, Git, PyTorch, TensorFlow, OpenCV, SolidWorks, Simulink