Alexander George Edward Krolicki

843-408-8411 : agkrolicki@gmail.com

Professional Summary

A life-long learner with a passion for engineering and academia. A dedication to discipline and rigorous practice has helped develop an attitude for success within an engineering team and organization. Past projects span a variety of topics including the testing and development of a 3.5MW diesel generator engine, automating rocket launch vehicle geometry trade space exploration, as well as the modeling, programming, and testing of autonomous drones and ground vehicles. It is a belief of mine that anything is possible with the proper planning and execution. I always look to learning from others' experiences and communicate my own to best determine the solutions to complex engineering problems.

Skills

- Siemens NX, Fusion 360, Solidworks, ANSYS
- Project Management, Leadership Ability
- MATLAB, Python, Linux, Robotics Operating System
- Machine Learning, Dynamics, Control Systems

Work History

Systems Engineering Intern, **5/2022 – 8/2022 (0.25 year)**
Astra Space – *Alameda, CA*

- Developed in house automated aero-thermal optimization tool to study rocket launch vehicle geometry trade spaces
- Created software tools to expedite the development of high-level requirements for rocket launch vehicle designs

Graduate Research Assistant: Research Lead, **1/2021 – 1/2023 (2 years)**
Distributed Intelligence and Robot Autonomy Lab – *Clemson, SC*

- Lead the construction, testing and development of an autonomous quadruped robot
- Researcher at the virtual prototyping of ground vehicles (VIPR-GS) center in the real-time controls group
- Developing new Koopman operator-based controls theory with major theoretical contributions in optimal control
- Advising 3 undergraduate research teams in learning simulation, hardware and software for autonomous systems

Undergraduate Research Assistant: Research Lead, **12/2018 – 12/2020 (2 years)**
Clemson Autonomous Systems Team – *Clemson*, SC

- Lead 2 independent projects to develop prototype autonomous air and ground vehicles
- Developed and field-tested mapping, localization, path planning and multiagent algorithms
- Experience working with Robotics Operating System (ROS) and performing HITL/SITL testing
- Worked with NVIDIA Jetson AI compute platforms in the Linux operating system (TX2, Xavier NX)

Development Test Engineer COOP, **05/2018 - 08/2019 (1 year)**
MTU Rolls Royce Power Systems AG – *Graniteville*, SC

- Prepare experiments and follow test procedures for diesel engine development
- Support a multi-disciplinary international team, communicate, and coordinate tests globally
- Engine test stand data analysis and drawing conclusions from tests for further improvement
- Independently managed my own time and schedule to meet internal and external deadlines

Education

Clemson University — *Clemson*, SC
Bachelor of Science in Mechanical Engineering, — December 2020
Minor in Mathematical Sciences — GPA:3.60
Master of Science in Mechanical Engineering, — December 2022
Thesis: Koopman Spectral Theory and Data-Driven Dynamical Systems for Control — GPA: 3.58

Recent Publications

A. Krolicki, S. Sutivani, and U. Vaidya, "Koopman-based Policy Iteration for Robust Optimal Control"
IEEE American Control Conference (ACC), Atlanta, GA, January 6th, 2022 [Published]
A. Krolicki, et. al., " Modeling Quadruped Leg Dynamics on Deformable Terrains using Data-driven Koopman Operators"
IEEE Modeling Estimation and Control Conference (MECC), Jersey City, NJ, October 2nd, 2022 [Published]
A. Krolicki, D. Tellez, and U. Vaidya "Nonlinear Dual-Mode Model Predictive Control using Koopman Eigenfunctions"
IEEE Conference on Decision and Control (CDC), Cancun, Mexico, December 6th, 2022 [Accepted]