

# Andrew Zheng

(803) 370-0980 | [azheng@clemson.edu](mailto:azheng@clemson.edu) | [linkedin.com/in/andrewzheng11](https://www.linkedin.com/in/andrewzheng11) | [andrewzheng-1011.github.io](https://andrewzheng-1011.github.io)

## EDUCATION

---

### Clemson University

Clemson, SC

*Master of Science in Mechanical Engineer, Control Systems, May 2023*

Cumulative GPA: 3.87/4.00

*Bachelor of Science in Mechanical Engineering, Minor in Math, May 2021*

Cumulative GPA: 3.86/4.00

Honors: magna cum laude

## PROFESSIONAL EXPERIENCE

---

### DIRA Lab, Research Assistant, May 2021 – Present

Clemson, SC

- Integrated legged planner framework, which increased the ease in integrating standard planners into quadrupeds
- Developed and integrated novel safe navigation algorithm for quadruped locomotion
- Developed model predictive controllers for quadruped locomotion
- Facilitated 2-year integration plan of state-of-the-art planning and control for legged robots

### Clemson University, Mentor, May 2023 – Present

Clemson, SC

- Guided two undergraduate honors students on their thesis research

### Clemson University, Teacher Assistant, August 2021-May 2023

Clemson, SC

- Enhanced knowledge and critical thinking of students by highlighting key concepts covered in course

### Parker TechSeal, Mechanical Engineer Intern, May 2019 – Aug 2019

Spartanburg, SC

- Performed nondestructive damage control by identifying defective rubber seal product, saving \$5000+ in product sales
- Designed and validated manufacturing process to create batches military gaskets of up to \$50,000 for Staver Hydraulics
- Conducted ASTM D142 Tensile Test to ensure product meet customer quality
- Programmed data searching algorithm to analyze runtime/downtime of company's vulcanizers
- Identify strengths and weakness of newly mechanical splicing to company's traditional splicing process

## PROJECTS

---

### Quadruped Robot Challenge

- Top 6 in Quadruped Robot Challenge hosted in IEEE Robotics and Automation Society (ICRA) 2023
- Designed algorithm for legged robot to traverse through a disaster environment

### Tail Landing Controller

- Designed a multi-linked tail controller algorithm to aid locomotion underactuated quadruped on contact-critical terrain

### Deep Koopman Autoencoder

- Created custom autoencoder model to learn physics informed linear operator with neural networks

### Undergraduate Research

- Integrate sensor fusion algorithm for navigation of mobile vehicle
- Developed safety stop mechanism on a microcontroller integrated with DIRA Lab's quadruped

## SKILLS

---

**Software:** ROS1, Gazebo, Linux, Git, CoppeliaSim, CasADi, Oracle VM Virtualbox, Tensorflow, Anaconda, Simulink, Solidworks

**Programming Language:** Python, Matlab, C++, LaTeX, PLC, VBA Excel

## RELEVANT COURSEWORK

---

**Mechanical Design:** Fundamentals of Machine Design

**Thermodynamics:** Foundation of Thermal and Fluid Systems, Heat Transfer

**Dynamic & Controls:** Modern Control, Modeling & Analysis of Dynamic Systems, Classical Controls, Vibrations, Advanced Controls, Applied Optimal Control

**Fluid Flow:** Fluid Mechanics, Compressible Flow

**Mathematics:** Linear Algebra, Numerical Methods, Statistical Analysis, Complex Variables

**Computer Science:** Applied Deep Learning

## AWARDS & SCHOLARSHIPS

---

- President's List (4.0 GPA)
- Dean's List (3.50+ GPA)
- Clemson Scholars
- Lancaster Endowed Memorial Scholarship
- SC Palmetto Fellows Enhancement
- SC Palmetto Fellows Scholarship

## PUBLICATIONS

---

- **Andrew Zheng**, Sriram S.K.S. Narayanan, and Umesh Vaidya. "Safe Navigation Density: Analytical Construction". Submitted to *IEEE Robotics and Automation Letters (RA-L)*.
- Joseph Moyalan, **Andrew Zheng**, et. al. "Off-Road Navigation of Legged Robots using Linear Transfer Operators". Submitted to *Model, Estimation, and Control Conference (MECC)*.
- Sarang Sutavani, **Andrew Zheng**, et. al. "Artificial Neural Network Based Terrain Reconstruction for Off-Road Autonomous Vehicles Using LiDAR". Submitted to *Ground Vehicle Systems Engineering and Technology Symposium (GVSET)*.
- Alex Krolicki, Dakota Rufino, **Andrew Zheng**, et al. "Modeling Quadruped Leg Dynamics on Deformable Terrains using Data-driven Koopman Operators". *Modeling Estimation and Control Conference (MECC)*, September 2022, Conference Presentation