Zhubo Zhou

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Education

Georgia Institute of Technology, *Atlanta, GA* *08/2016 – 12/2020*

- B.S. in Mechanical Engineering (GPA: 3.7/4.0), minor in Robotics (minor GPA: 4.0)
- Faculty Honors (Spring 2020, Summer 2019)
- President's Undergraduate Research Award (Spring 2018)
- Air Products Undergraduate Research Fellowship (Spring 2018)

Internship & Research

Research Assistant at Adaptive Robotic Manipulation (ARM) Lab, *Atlanta, GA* *05/2019 - 12/2020*

Multiscale Haptic Simulation

- Created CHAI3D (a haptic framework written in C++) and CoppeliaSim (a robot simulator) simulations to validate the framework for controlling 2 programs simultaneously using a haptic device

Synchronous Position Control of the Haptic Paddle Suite

- Prototyped a teleoperation suite consisting of two Arduino-driven force feedback joysticks (main & sub) as a testbed, and achieved real-time position control utilizing a PID controller

R&D Engineering Co-op at Medshape, *Atlanta, GA* *01/2019 – 04/2019, 08/2019 – 12/2019*

- Supported the R&D department in design, analysis, and testing of next generation implant systems
- Designed and prototyped DynaScrew assembling system, Mini compression knob, test fixtures, etc.
- Created protocols & ran tests (e.g., tensile) using Instron / load cell to validate implants for FDA submission
- Ran FEA simulation to optimize & validate designs using ANSYS Workbench/ SolidWorks
- Programmed in Mastercam to machine fixtures using CNC and analyzed manufacturing defects

Paid Undergraduate Researcher at Nian Liu's Lab, *Atlanta, GA* *08/2017 – 05/2018*

High-pressure chamber for visualization of electrochemical testing

- Designed and validated a semi-transparent carbonate-aluminum chamber with 4 wire outlets

Graphene oxide-modified zinc anode for rechargeable aqueous batteries

- Published an academic journal article as the first author on Chemical Engineering Science
- Improved accumulative capacity of rechargeable Zn batteries by 28% via surface modification method
- Experimentally characterized cycling performance of batteries with GO@Zn anode using EC-lab

Publication

Zhou, Z., Zhang, Y., Chen, P., Wu, Y., Yang, H., Ding, H., Zhang, Y., Wang, Z., Du, X., & Liu, N. (2019). **Graphene oxide-modified zinc anode for rechargeable aqueous batteries**. *Chemical Engineering Science*, 194, 142–147. https://doi.org/10.1016/j.ces.2018.06.048

Zhang, Y., Wu, Y., Ding, H., Yan, Y., **Zhou, Z.**, Ding, Y., & Liu, N. (2018). **Sealing ZnO nanorods for deeply rechargeable high-energy aqueous battery anodes**. *Nano Energy*, 53, 666–674. https://doi.org/10.1016/j.nanoen.2018.09.021

Skills & Interests

Software: SolidWorks (CAD&CAE), Simulink, ANSYS, LabVIEW, Siemens NX (CAD&CAE)
Programming Language: MATLAB, Python, C++, C, Java, Engineering Equation Solver
Other Skills: Linux, fast prototyping (3-D printer, CNC machine, lathe, mill), material testing
Interest: cooking, biking, longboarding, painting, Chinese calligraphy

Projects

Capstone: Automated Leak Sensor Assembling System for Rheem's Smart Water Heater Pan *Fall 2020*

- Developed an automation system that cut assembling time by 70% with 4 teammates
- Responsible for electrical & control system design and implementation (actuator selection, circuit design, controller programming), structural analysis, and creating Solidworks animations

CS4641 Machine Learning: Instrument Identification for Real-world Music Pieces *Summer 2020*

- Applied supervised learning to identify instruments in the music, achieved a > 90% accuracy for test pieces
- Written in Python, extracted feature vectors using MFCC and performed classification using SVM

ME4405 Mechatronics: Indoor Obstacle Avoidance Patrolling Vehicle *Spring 2020*

- Built and programmed a robot car with obstacle avoidance capability in a well-defined indoor area
- Enabled it to stop at 20 ± 2 cm in front of obstacles utilizing PID control via an MSP432 controller

EcoCAR Mobility Challenge: Transform a Chevrolet Blazer into A Hybrid Vehicle *08/2018 – 12/2019*

Propulsion System Integration team & Propulsion Controls and Modeling team

- Designed a cooling loop for team added MGU using EES to meet heat rejection & geometric requirements
- Implemented safety requirements (e.g., fault detection) for the supervisory controller via Simulink
- Ran FEA to validate modifications to the vehicle using Siemens NX Simulation
- Finalized P1 inverter mount design based on topology optimization & design for manufacturing principles

ME 2110 Creative Decisions and Design: Robot Design Competition *Summer 2018*

- Designed, built, and tested a robotic system capable of grasping and moving objects with 3 teammates
- Responsible for programming all the actuators and sensors using LabVIEW via an NI MyRIO controller

Leadership

Shell Tutor for ME courses, *Georgia Institute of Technology, Atlanta, GA* *05/2018 – 12/2018*

Computing Techniques (understand and implement numerical methods using MATLAB) & Thermodynamics

- Held office hours twice a week to help students comprehend and implement course concepts

Teaching Assistant for Thermodynamics, *Georgia Institute of Technology, Atlanta, GA* *Fall 2018*

- Graded weekly homework and answered students' questions

Georgia Tech Chinese Students and Scholars Association, *Atlanta, GA* *09/2017- 05/2018*

Vice President, Director of Publicity

- Led a team of 14 members responsible for preparing publicity materials (e.g., feature stories)
- Managed social media postings, website development, poster design, video editing, etc.