Shaobo Wang

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EDUCATION

Carnegie Mellon University Pittsburgh, PA
Master of Science in Mechanical Engineering Dec. 2022
GPA: 3.88/4.00
Selected Coursework: Modern Control Theory; Multivariable Linear Control; Robot Dynamics and Analysis (TA); Advanced Control Systems Integration; Planning and Decision-making in Robotics; Computer Vision for Engineer

Wuhan University Wuhan, China
Bachelor of Science in Mechanical Design Manufacturing and Automation Jun. 2021

University of California, Berkeley (Remote) Wuhan, China
Exchange Program - Coursework: Mechatronic Design Sep. 2020 – Dec. 2020

SKILLS

Programming Languages: Advanced – C, C++ 11/14; Intermediate – Python, Java
Software/Libraries: MATLAB/Simulink; ROS; OMPL; OpenCV; SOLIDWORKS; Git
Featured Knowledge: First-principle Modeling; System Identification; LQR; Kalman Filter; Robust Control

PROFESSIONAL EXPERIENCE

Johnson & Johnson MedTech Santa Clara, CA
Robotics and Controls Intern May. 2022 – Aug. 2022

- Developed software in the product code base of the surgical robot platform using C++
- Researched motion planning and control tasks for high-DoF surgical robots and benchmarked multiple planning algorithms through on-the-fly dry tests to evaluate their performance metrics for future reference

ACADEMIC PROJECTS

Dual-rotor Aerospace System Control Pittsburgh, PA
Carnegie Mellon University Apr. 2022 – May. 2022

- Modeled nonlinear MIMO system dynamics and performed system identification based on the linearized model
- Designed state estimator and full-state feedback controllers designed with both LQR and robust control methods and implemented via Simulink and Arduino to realize reference trajectory tracking in both yaw and pitch angles

Monopedal Jumping Robot Prototyping & Research Pittsburgh, PA
Carnegie Mellon University Feb. 2022 – May. 2022

- Performed the hybrid dynamics modeling and simulation of a two-DoF single-legged robot to guide the mechanical design and the BLDC motor selection of the prototype
- Composed posture hold and jump tests Python scripts for motor torque control using FOC motor driver and its API to research the effects of the tibia-femur length ratio on jumping performance

Controller Design for Autonomous Vehicles Simulation Pittsburgh, PA
Carnegie Mellon University Oct. 2021 – Nov. 2021

- Implemented model predictive controller for the lateral control and PID controller for the longitudinal control of autonomous vehicles to realize trajectory tracking mission under Webots simulation environment
- Deployed A-star planning algorithm to avoid low-speed moving obstacles by re-planning a feasible bypass path

RESEARCH EXPERIENCE

Wuhan University Wuhan, China
Research Assistant in Professor Zhao Guo's Lab

Design of A Wearable Device for Hand Gesture Recognition Oct. 2019 – Mar. 2021

- Designed motion intention sensor for robot control based on flexible-printed-circuit technique and capacitance digital converter to measure capacitance variation during muscle contraction on a 10-picofarad scale

PATENTS

- A Flexible E-skin Based on Capacitive Sensing Array for Motion Recognition, China, CN202010030563.0 [P]. (Zhao Guo, **Shaobo Wang**, Jiwei Huang)