SHANGZHOU YE

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https://github.com/shangzhouye Chicago, IL

ROBOTICS PROJECTS

Stereo Visual SLAM | 2020 **[Github]**

- Developed a stereo visual SLAM system that incorporated feature-based tracking and keyframe-based optimization
- Implemented feature detection/matching, motion estimation, map management/expansion, and bundle adjustment
- Evaluated results on KITTI dataset

EKF SLAM on Turtlebot3 | 2020 **[Github]**

- Implemented feature-based EKF SLAM from scratch, and landmark detection using a 2D laser scanner
- Developed Lie Group library in C++ for a differential drive robot
- Created Turtlebot3 URDF for the Gazebo simulation

Sawyer Robot Playing Mini-Golf | 2019 **[Github]**

- Implemented motion planning node with obstacle avoidance using ROS MoveIt
- Adopted Git/Github for project version control

Motion Planning and Navigation | 2019 **[Github]**

- Implemented a graph-based (A* search) and sampling-based (RRT) obstacle avoidance motion planner using Python
- Designed an inverse kinematics controller for path tracking

See shangzhouye.tech for further projects in portfolio

RESEARCH EXPERIENCE

Mechanical Design and Comparative Study of a Novel Foot Interface for Controlling a Robotic Assistive Arm

Research Assistant, RoMI Lab, Monash University

Nov. 2018 – Feb. 2019 Melbourne, Australia

- Developed a novel foot interface that controls a 4-DoF robotic assistive arm
- Completed CAD modeling, FEA, prototyping, encoder, sensor selection, and Arduino programming
- Designed assessment protocol and led a two-stage comparative study involving 18 participants

Concussion Monitoring: Experimental Assessment of Commercial Head Impact Sensors

Research Assistant, RoMI Lab, Monash University

Nov. 2018 – May 2019 Melbourne, Australia

- Assessed accelerometer accuracy using the proposed three-stage wearable impact sensor assessment protocol
- Performed significance analysis and compared findings with previous research results

SKILLS

- Using Linux as Primary OS
- **Tools:** ROS, OpenCV, G2O, Version Control, CMake, MoveIt
- **Programming languages:** C++, C, Python, MATLAB
- **Engineering:** Mechatronics, SolidWorks, ANSYS, 3D Printing, FEA
- **Data Analysis:** Significance Tests, IBM SPSS
- **Languages:** English, Chinese (Mandarin)
- Advanced academic writing skills

EDUCATION

Northwestern University

Master of Science in Robotics

Expected Dec. 2020 Evanston, IL

- GPA 3.8/4.0
- **Coursework Focus:** Computer Vision, Machine Learning, Mechatronics, SLAM, Optimal Control

Monash University

Bachelor of Engineering (Honors) in Mechanical Engineering

Dec. 2018 Melbourne, Australia

- GPA: 3.8/4.0 (1st. in Mechanical Engineering)
- Award for Excellence in Robotics 2018
- P. Dransfield Prize for Excellence in Systems and Control Engineering 2017

Central South University

Bachelor of Engineering in Traffic Equipment and Control Engineering

July 2019 Changsha, China

- Tutor for freshman class 2016
- Established and led department journal 2015

PRESENTATION

S.-Z. Ye, P. Jain, A. Walley, Y.-J. Yang, and E. Abdi, "A Novel Four-Degree-of-Freedom versus a Conventional Foot Interface for Controlling a Robotic Assistive Arm in Surgery," Late Breaking Results Poster at *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.