Zixu Zhang

EDUCATION

Princeton University
  PhD in Electrical Engineering

Princeton, NJ
Aug 2020-Present

University of Michigan
  Master of Science in Robotics
- Advisor: Dr. Matthew Johnson-Roberson

Ann Arbor, MI
Aug 2018-May 2020
GPA 4.0/4.0

University of Illinois at Urbana – Champaign
  Bachelor of Science in Mechanical Engineering with Highest Honors
- Electrical Engineering Minor
- Computer Science Minor

Urbana, IL
Aug 2014-May 2018

RESEARCH EXPERIENCE

University of Michigan
Ford Center for Autonomous Vehicles

Ann Arbor, MI
Nov 2018 – May 2020

- Collaborated and led a large-scale multimodal dataset project for autonomous driving
- Developed ROS drivers for synchronized data collection from multi sensors including LiDAR, stereo RGB and thermal camera, GPS, and INS systems
- Developed geometric calibration algorithms for stereo thermal cameras and multi-spectral camera set
- Proposed a novel, temporal based image deblurring algorithm for thermal infrared cameras

University of Illinois at Urbana – Champaign
Bretl Research Group

Urbana, IL
Feb 2017-Aug 2018

- Developed ROS-integrated autonomous ground robot and its GAZEBO simulation
- Cooperated to implement efficient methods for robot frontier exploration and object detection with occupancy grid mapping
- Developed algorithms for real-time predictive model of feature point association in Visual Simultaneous Localization and Mapping (VSLAM) with data-driven approach
- Developed online real-time path planning framework with feature constraints for reliable VSLAM-based indoor navigation for autonomous ground robots

Dynamic Robotics Laboratory

Sept 2016-Jan 2017

- Aided the design of bio-inspired climbing and flying robot actuator
- Designed and manufactured linear testing bed for quasi-direct-drive robot leg
- Conducted experiments and analyzed robot leg design for optimized jumping

Renewable Energy & Turbulent Environment Group

May 2015-Aug 2017

- Aided research on transition to turbulence over 2D and 3D periodic large-scale wavy-wall
- Interpreted and analyzed experimental results for transition to turbulence over periodic roughness
- Conducted experiments on turbulent boundary layer over and within complex media

WORK EXPERIENCE
Magna International   Troy, MI
R&D Intern of Advanced Robotics Group   Jan 2019 – Aug 2019
- Led the project on fenceless industrial robots for safe human robot interaction
- Investigated the real-time applications of ROS2 for industrial robots
- Developed flexible and automatic cameras-robot extrinsic calibration framework

Northern Engraving Corporation   Sparta, WI
Engineering Intern for Continuous Improvement   Jun 2016-Aug 2016
- Led and Conducted DOE analysis for sheet preparation scrap factors
- Evaluated the current state and root causes of defects for Tesla Door Trims lines
- Revised standard work procedures, trained operators and improved yield and line rate by 40%
- Coordinated engineers with production floor to implement 5S and lean manufacture in production

TEACHING EXPERIENCE
University of Michigan
Student Instructor for Self-driving Cars: Perception and Control (ROB 535)   Sept 2019 – Present
Grader for Linear Systems Theory (EECS 560)   Sept 2018 – Dec 2018
Grader for Introduction to Signals and Systems (EECS 216)   Sept 2018 – Dec 2018

University of Illinois at Urbana – Champaign
Course Assistant for Introductory Solid Mechanics (TAM 251)   Aug 2015 – May 2018
Grader for Introduction to Electric and Electronic Circuits (ECE 205)   Jan 2015 – Aug 2016

PUBLICATION
1. "Pixel-wise motion deblurring of thermal videos," *Robotics: Science and Systems 2020*, Jul. 2020

2. Feature-constrained Active Visual SLAM for Mobile Robot Navigation," 2018 *IEEE International Conference on Robotics and Automation,* May 2018, Brisbane, Australia.

3. "Vortical structures in the near-wake of tabs with various geometries," *Journal of Fluid Mechanic*, vol. 825, July 2017.

4. "Transition to turbulence over 2D and 3D periodic large-scale roughnesses," *Journal of Fluid Mechanics*, vol. 804, Oct. 2016.

RELEVANT SKILLS
ANSYS, Cero Parametric, C, C++, CUDA, LabVIEW, LaTeX, MATLAB, Python, ROS, Simulink, SolidWorks, TensorFlow

HONORS AND ACTIVITIES
- University of Illinois at Urbana-Champaign, T.A. Peebles Award, 2017
- University of Illinois at Urbana-Champaign, Department of Mechanical Science and Engineering Grant for Undergraduate Research, 2015