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Yu Zhou

Education

University of Notre Dame — IN, USA
Doctor of Philosophy in Electrical Engineering — 2023 - Current
- Lab: ND ROAR
- Research area: Machine Learning, Robotics, and Computer Vision

Duke University — NC, USA
Master of Science in Mechanical Engineering and Materials Science — 2021 - 2023
- GPA: 3.57/4.00

Florida Institute of Technology — FL, USA
Bachelor of Science in Mechanical Engineering — 2018 - 2020
- GPA: 3.78/4.00

Publications

1. **Yu Zhou**, Ruochu Yang, Mengxue Hou, "Flow Field Estimation in Underwater Vehicle Navigation using Sporadic Image Observations," in *International Conference on Ubiquitous Robots (UR)*, 2025.
2. Likai Pei, **Yu Zhou**, Xingtian Wang, Xueji Zhao, Wanxin Huang, Boyang Cheng, Halid Mulaosmanovic, Stefan Duenkel, Dominik Kleimaier, Sven Beyer, Kai Ni, Mengxue Hou, Michael Niemier, and Ningyuan Cao, "Towards Uncertainty-aware Robotic Perception via Mixed-signal BNN Engine Leveraging Probabilistic Quantum Tunneling," in *Design Automation Conference (DAC)*, 2025.

Research Experience

3DGS-based Uncertainty-aware Robotic Perception | IN, USA — 2025.04 – Present
- Developing a robotic perception pipeline combining 3D Gaussian Splatting with pose estimation and uncertainty quantification.
- Implemented Monte Carlo sampling to perturb 3DGS scene parameters for evaluating epistemic and aleatoric uncertainty.
- Designed information-gain driven robot path planning

Distance and Multi-object Detection Survey | NC, USA — 2023.01 – 2023.04
- Designed system with depth camera, QuickSort algorithm, and angle-marked camera stand for object distance detection.
- Applied YOLOv4, FasterRCNN, and YOLOv5 on custom datasets with ImageNet feature extractors.
- Analyzed effects of distance, camera angle, and resolution on small object detection performance.

Deep Learning-based UAV Object Detection | NC, USA — 2022.09 – 2022.12
- Simulated UAV operations in ROS Melodic and Gazebo, enabling autonomous take-off, landing, and object following via RViz.
- Trained SSD-MobileNetV2 with ResNet-50/101 backbone on COCO dataset for robust object detection in varied scenes.

Collaborative Rover Design and Prototyping | FL, USA — 2019.09 – 2020.05
- Developed rover chassis in SolidWorks and implemented motion control in C++ for navigation and turning behaviors.
- Integrated temperature sensors and Arduino-based cooling system to manage thermal performance of motors and battery.

Internships

Brain Tool Lab at Duke University | NC, USA 2022.05 - 2022.07

- Applied deep learning model for laser-tissue orientation planning.
- Found the optimal laser orientation to minimize the possibility of excessive laser-induced tissue ablation.

Philips | Shanghai, China 2021.03 - 2021.06

- Develop engaging content for social media platforms.
- Prepare reports and presentations summarizing research findings.

Fiberhome | Wuhan, China 2020.06 - 2020.08

- Applied SolidWorks to design main structures of products, produced engineering drawings.

Awards and Honors

- **First Prize**, Duke Entrepreneurship Program (Summer) 2017.08
- **Academic Scholarship**, Florida Tech (Up to 14000 USD, GPA Top 10%) 2019.02

Skills

Languages: Chinese, English.

Software/Platform: ANSYS Workbench, Robot Operating System (ROS), SolidWorks.

Programming: `Python`, `C++`.

Academic Services

Reviewers for: *Journal of Intelligent and Robotic Systems*, *International Conference on Robot and Human Interactive Communication*.

Volunteer for: *International Conference on Intelligent Robots and Systems (IROS 2023)*