Zhongming Huang

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Education

Cornell University **(Department of Electrical and Computer Engineering)** Aug. 2023 - Present
Master of Engineering *GPA: 4.0/4.0*

Tiangong University **(School of Electronic and Information Engineering)** Sep. 2019 - Jul. 2023
Bachelor of Engineering *GPA: 3.81/4.0*

Bachelor's Dissertation

Instance Segmentation Based on Polygon Regression Mar. 2023 - Jun. 2023
Awarded as the Excellent Graduation Thesis (highest honor)

- Aimed to use contour prediction to achieve instance segmentation task in the 2D autonomous driving scenario
- Adapted YOLOv5 prediction head with additional vectors to generate the instance's polygon contour vertices, Polar IoU Loss was used to train and evaluate the network
- Trained and tested on the Cityscapes Dataset with 31.4% Mask mAP

Relevant Coursework

Statistical Inference and Decision (in progress), Computer Vision (in progress), Graduate Topics in ECE (in progress), Mathematical Modeling, Linear Algebra, Machine Learning, Embedded Systems

Skills

Languages: Python, C, VHDL, Markdown, LaTeX
Tools: Visual Studio Code, MATLAB, Ubuntu, Anaconda, Keil, Quartus, Overleaf, Visio
Frameworks: ROS, Raspberry Pi, TensorFlow, PyTorch

Publications

Semantic Road Segmentation Based on Adapted Poly-YOLO Aug. 2023
First Author | EI Indexing | The 3^{rd} Int'l Conference on Signal Processing and Machine Learning

6-DoF Occluded Object Semantic Grasp Planning with De-occlusion Instance Segmentation Sep. 2022
First Author | EI | Best Presentation Award | The 5^{th} Int'l Conference on Intelligent Autonomous Systems

High Precision Small Hepatocellular Carcinoma Detection Using Improved EfficientNet with Self-Attention Sep. 2022
Co-first Author | EI | The 22^{nd} IEEE/ACIS Int'l Conference on Computer and Information Science

Fire Detection System Based on Deep Learning Quadrotor UAV © Sep. 2022
First Author | P.R.China Software Copyright

Dynamic Feature Extraction Using I-Vector for Video Fire Detection May. 2022
Co-first Author | EI | Best Presentation Award | The 3^{rd} IEEE Int'l Conference on Pattern Recognition and Machine Learning

Experience

Collaborative Embodied Intelligence Lab & Napp Lab | *Graduate Student Researcher* Sep. 2023 - Present
Advisors: Professor Nils Napp and Professor Kirstin Petersen
Developing quadruped construction robots with SLAM, motion control and path planning

Excellent Engineer's Club | *Undergraduate Group Leader* Sep. 2021 - Sep. 2022
Hosted a 1-year provincially funded UAV fire detection research program

Robotics Lab | *Undergraduate Group Member* Sep. 2020 - Sep. 2021
Tested UAV, AUV and manipulator robots, participated in 2 competitions with Provincial Awards