

Tianxiao Ye

E-mail: tye46@wisc.edu | Mobile: +1 (608) 698 - 8160 | Madison, WI

EDUCATION

University of Wisconsin–Madison (WISC) **Sept 2023-May 2025(expected)**

Master in Science of Electrical and Computer Engineering

- Current cumulative GPA: **3.9/4.0**

University of Illinois-Chicago (UIC)

Aug 2022-May 2023

One-year Exchange of Electrical and Computer Engineering

- Cumulative GPA: **4.0/4.0**

Harbin Institute of Technology (HIT)

Sept 2019-Jun 2023

Bachelor of Engineering in Robotics

- Cumulative GPA: **3.5/4.0**

PUBLICATION

Z,Hong., E,Hamdan., Y,Zhao., T,Ye., H,Pan., AE,Cetin. **Wildfire detection via transfer learning: a survey.** *Signal, Image and Video Processing(SLVP)*, (2023).

RESEARCH EXPERIENCE

WISC Autonomous & Resilient Controls(ARC) Lab

Sept 2023-now

Advised by Prof. Xiangru Xu

- Independently implemented trajectory tracking for an unmanned ground vehicle using a nonlinear model predictive control (NMPC) implemented with the Ipopt solver called via CppAD and CasADi. This involved constructing the NMPC model (objective function, system dynamics constraints, other constraints) and writing all the C++ code, as well as developing a complete ROS package.
- Independently developed real-time nonlinear model predictive control for unmanned ground vehicle trajectory tracking using ACADO, achieving computation frequencies of 100 times per second with a mean squared error within 1%.
- Independently set up the onboard visual-inertial odometry system OpenVINS, running on Jetson Orin Nano 8G with a ZED2i camera.
- Assisted in the implementation of a deep visual-inertial odometry system trained in Gazebo using recurrent neural networks.

UIC Aecyy Lab

Dec 2022-May 2023

Advised by Prof. Ahmet Enis Cetin

- Explore the feasibility of several classical models in the field of wildfire detection which contains Residual Neural Network V2(ResNetV2), Data-efficient, image Transformers (DeiT), EfficientNetV2, Big Transfer (BiT), MobileNetV3, Swin Transformer and compare their performance by evaluating critical indicators, including accuracy, false alarm rate, true detection rate, detection latency.
- Built the dataset for training a wildfire detection neural network with over 14,000 training images.

HIT Robotics Lab

May 2020-May 2022

Advised by Prof. Bo Huang and Prof. Jianwen Zhao

- Rewriting the cost function parameters in the A-star algorithm to improve the accuracy of self-mapping by 8%.
- Responsible for the field testing work in a flexible pipeline robot which was made for the overhaul of nuclear power plant equipment.

PROJECTS

Real Time Pedestrian and Vehicle Detection Using YOLOv5

Jan 2024-Mar 2024

- Developed a robust detection system for identifying pedestrians and vehicles, utilizing YOLOv5 and a custom-built model.
- Manually annotated over 5,000 images with LabelMe, contributing to an open-source database hosted on Roboflow.
- Applied transfer learning to fine-tune the model, achieving a remarkably high accuracy of 99.98% in detection tasks.

ROS Automatic Navigation Car using GMapping SLAM and Visual SLAM

Aug 2022-May 2023

Graduation Project, University of Illinois at Chicago

- Built a multi-sensor fusion system based on the Robot Operating System (ROS) was developed and implemented, utilizing depth cameras and RGB cameras to build a 3D map and navigate challenging terrains.
- Using Rapidly-exploring Random Trees works by randomly generating a tree of potential paths from the vehicle's starting location, exploring the environment, and creating new paths by iteratively adding new nodes and edges to the tree.

Forest Fire Prevention Robot

Oct 2022-June 2023

Graduation Project, Harbin Institute of Technology

- Decreasing the time of the RRT self explore algorithm by 12%. Decreasing GPU Usage by 4%.
- Tried some models for skeleton recognition and integrate them on the robot via OpenCV.

EXTRACURRICULAR ACTIVITIES

Outstanding Practice Individual of College Student Volunteers

Oct. 2020-Oct.2021

- Assist students from challenging family backgrounds in qualifying for technology competitions.

Technical department member of HITwh College- Student Union

Oct. 2019-Jan. 2021

- Independently designed the emblem of the college which was selected by the committee

Science and Technology Leader of HITwh Class of Robotics Major

Jan. 2019-Aug. 2021

- Managed the scientific and technological innovation achievements, competition awards, and papers

SKILLS

Content Creation Skills: Overleaf; Microsoft Excel, Word, PowerPoint; Adobe Photoshop, Premiere Pro

Engineer skills: C&C++&Python; Linux&ROS1/2; Gazebo&Rviz; PyTorch&Tensorflow; Git&Github; AutoCAD&Solidworks&3DPrinting; Verilog; Matlab Toolboxes.

Embedded systems experience: JetsonOrinNano, JetsonNX, STM32, Raspberry Pi 4b

Languages: English (proficient user), Mandarin Chinese (native speaker)

AWARDS

College of Engineering Honor Award of WISC EXPO

Apr. 2024

- Representing ARClab, won an Honorary Prize for a robotic arm that writes names and a vehicle that navigates around obstacles.

College of Engineering Best in Show Award of UIC EXPO

May. 2023

- At the EXPO Corporate Summit, over five judges highlighted its research caliber and innovation.

Student Honorary Member scholarship of HIT STUDENT UNION

Oct. 2020

- Conduct random interviews at Anhui History Museum to survey the historical sensitivities of people
- The poster and departmental emblem designed were adopted and have been in use continuously in AY2020/2022.