Mark Zhou

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EDUCATION

UNIVERSITY OF TORONTO
Master in Information
Dec 2025 | Toronto, ON

RYERSON UNIVERSITY
BS in Computer Science
May 2022 | Toronto, ON
Award: Undergraduate Research Opportunities over $10,000
Dean's List

COURSEWORK

GRADUATE
Statistics for Data Science
Data Modeling and Database Design
Experimental Design for Data Science
Data Analytics: Introduction, Methods and Practical Approaches
Convex Optimization
Graphic Design for UX
Adopting DevOps for Large-Scale information Systems

UNDERGRADUATE
Database Systems
Operating Systems
Web Systems Development
Machine Learning
Intro to Computer Vision
Data Structures
Artificial Intelligence
Autonomous Mobile Robotics
Undergraduate Thesis

SKILLS

PROGRAMMING
Over 3000 lines:
Python • Matlab • LaTeX
Over 1000 lines:
C • C++ • Julia • Assembly • Bash
Tools:
Git • VS Code • LaTeX
Platforms:
Ubuntu • Windows • IOS • Gazebo • ROS • Arduino
Familiar:
OpenCV • TensorFlow • PyTorch • MySQL • Scikit-Learn
Bilingual:
Chinese • English

RESEARCH EXPERIENCE

TORONTO INTELLIGENT SYSTEMS LAB | Research Assistant
University of Toronto | Sept 2022 - Nov 2022 | Toronto, ON
- Supervised by Dr. Igor Gilitschenski and PhD student Samarth Sinha.
- Developing 3D scenes reconstruction.

ROBOTICS AND COMPUTER VISION LAB | Research Assistant
Toronto Metropolitan University | Nov 2020 – Aug 2022 | Toronto, ON
- Supervised by Dr. Sajad Saeedi.
- Created a backbone.js-like framework for the Captions editor.
- An algorithm was created to reduce the number of keypoints for feature extraction and maintain the distribution.
- Using Colmap to generate 3D point cloud and projection from 3D point cloud to 2D plane using OpenCV.
- Develop new efficient maps for robotics applications.

PROJECT

A NEW EFFICIENT MAP REPRESENTATION FOR ROBOTIC
Toronto Metropolitan University | May 2021 – Aug 2022 | Toronto, ON
Worked with Christopher Kolios, **Prof Sajad Saeedi** and **Prof Yeganeh Bahoo**. To develop map representations consisting of sparse features occupy less storage than images and comparison of ORB, SIFT, AORB, and ASIFT features for image reconstruction using a deep learning network.

COMPARE FEATURE MATCHING RATE
Toronto Metropolitan University | Sep 2021 – Apr 2022 | Toronto, ON
Overview and implement CNN, ORB, SIFT, and Affine SIFT feature extraction algorithms on Python. Compare extraction time, number of matches, and match rate.

ANALYSIS DATA BY ASSOCIATION ANALYSIS AND CLUSTERING ANALYSIS
Toronto Metropolitan University | Sep 2021 – Apr 2022 | Toronto, ON
Utilized the Car Evaluation Data Set to solve several practical problems, including association analysis and clustering analysis.

SAFE DRIVING ASSISTANCE
Toronto Metropolitan University | Sep 2021 – Dec 2021 | Toronto, ON
Implemented lane keep assistance by using the infrared photoelectric sensor and implemented autonomous emergency braking by using an ultrasonic sensor.

TITANIC MACHINE LEARNING FROM DISASTER
Toronto Metropolitan University | Sep 2021 – Apr 2022 | Toronto, ON
Overview and implement Support vector, random forest, logistic regression, and design a neural network. Compared to classic machine learning classifiers, our neural network has the highest accuracy of 80.28%.

APPLY QUADTREE ON ASIFT TO REDUCE KEYPOINTS
Toronto Metropolitan University | Sep 2021 – Apr 2022 | Toronto, ON
Implemented a method to reduce the number of keypoints and maintain evenly distributed features. The reduction rate is over 96%.