

# Ruiqiang Xiao

Personal Webpage

MSc of Data-driven Modeling, School of Science

Hong Kong University of Science and Technology, Hong Kong SAR

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🐙 GitHub Profile

🌐 LinkedIn Profile

## EDUCATION

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### •Southeast University, Nanjing, China

Sept. 2018-June. 2022

B.E. in Highway and Bridge Engineering, School of Transportation

GPA: 90/100

### •National University of Singapore, Singapore

Sept. 2021-May. 2022

A one-year joint training program between National University of Singapore and Southeast University

### •The Hong Kong University of Science and Technology (HKUST), Hong Kong

Sept. 2022-June. 2023

MSc in Data-driven Modeling, School of Science

CGPA: 4.02/4.3 Percentage: 10%

### •Main Courses: Statistical Machine Learning(A+), Stochastic Processes and Applications(A), Deep Learning for Modeling: Concepts, Tools, and Techniques(A+)

## RESEARCH INTEREST

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- Medical image segmentation, computer vision, and machine learning
- Large-scale multi-modality biomedical image data integration for more precise medical analysis

## RESEARCH EXPERIENCE

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### •Medical Image Segmentation using Active Contour and Deep Learning Methods

Hong Kong SAR

Project Leader

Sept. 2022-June. 2023

- Designed and implemented a novel image segmentation approach by integrating unique active contour methods – elastic interaction-based method with the U-shape deep learning framework.
- Proposed an attention module to leverage spatial and channel context information to enhance high-level semantic understanding, prompting thin structure segmentation accuracy and efficiency.
- Focused on applications in medical imaging, contributing to improved diagnosis and treatment planning.
- The article **GAEL-UNet: Global Attention and Elastic Interaction U-Net for Vessel Image Segmentation** is submitted to BIBM 2023.

### •The Detection of Apparent Cracks in Bridges Using Computer Vision

Nanjing, China

Project Leader

Aug. 2021-Jun. 2022

- Developed a deep learning model using YOLOv5's image recognition algorithm to detect and analyze cracks in bridge structures.
- Implemented lens distortion correction and orthogonal projection methods to quantify the identified cracks accurately.
- An article in process of modifying: **YOLOv5s-GTB: light-weighted and improved YOLOv5s for bridge crack detection.**

### •Automated Road Information Extraction Based on Laser Scanning Point Cloud

Nanjing, China

Project Leader

Aug. 2020-Aug. 2021

- Utilized machine learning techniques to extract road level data sets, contributing to urban planning and development.
- Innovated a linear index-based segmentation strategy for efficient point cloud data processing.
- Addressed noise issues through data refinement, enhancing the accuracy of surface segmentation.

### •Vehicle Dispatching Considering User Preference Based on Reinforcement Learning

Singapore

Project Leader

Aug. 2021- May. 2022

- Led a team to analyze NYC taxi data, studying user behavior preferences for carpooling platforms.
- Developed and tested incentive strategies using multi-agent reinforcement learning, maximizing platform efficiency and user satisfaction.
- Implemented a deep Q-network-based ordered allocation system, contributing to the field of intelligent transportation systems.

## HONOURS AND AWARDS

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- Honours: Subot Scholarships (2021-2022) (top 1 out of 95), Outstanding Graduate of Southeast University(2022)
- Awards: First Prize of Jiangsu Student Transportation Technology Competition (2021) (top 6 out of 122), The Second Prize Contemporary Undergraduate Mathematical Contest in Modeling (2020)

## WORKING EXPERIENCE

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### •Hong Kong Center for Construction Robotics (HKCRC)

*Hong Kong*

*Research Intern*

Sep. 2022-Jan. 2023

- Conducted comprehensive data collection and organization, tracking the latest trends and technologies in the Hong Kong construction industry.
- Developed strategic plans for implementing robotics, focusing on the digitalization of construction sites, with potential applications in medical and structural imaging.

## TECHNICAL SKILLS AND INTERESTS

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**Languages:** C/C++, Python, LaTeX

**Technical:** Pytorch, Git, Linux, Tensorflow, Matlab

**Specialized Skills:** Medical Image Analysis, Deep Learning, Computer Vision, Active Contour Methods

**Libraries :** C++ STL, Python Libraries, CUDA Libraries

**Soft Skills:** Problem Solving, Self-learning, Presentation, Adaptability