

Haowen Luo

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EDUCATION

Department of Geography and Resource Management, The Chinese University of Hong Kong

- Ph.D. in Geography and Resource Management Hong Kong, Aug 2021 – Present
 - Supervisor: Prof. Yuan Xu, Prof. Bo Huang
 - Ph.D. Candidate
 - CUHK Vice-Chancellor's Scholarship
 - Expected to be awarded in Nov 2025.

- M.Sc. in GeoInformation Science Hong Kong, Sep 2019 – Jun 2020
 - Cumulative GPA: **3.9/4.0**.
 - Admission Scholarship
 - Faculty of Social Science Dean's List

School of Geography and Planning, Sun Yat-sen University

- B.Sc. in Geographic Information Science Guangzhou, Sep 2015 – Jun 2019
 - Cumulative GPA: **3.8/4.0**.
 - The Third-prize Scholarship in Sun Yat-sen University.

PUBLICATIONS

- [1] Will W Qiang†, **Haowen Luo**†, Yuxuan Xiao, David WH Wong, Alex S Shi, Ziwei Lin, Bo Huang, and Harry F Lee*. Can urban polycentricity improve air quality? evidence from chinese cities. *Journal of Cleaner Production*, 406:137080, 2023.
- [2] **Haowen Luo** and Bo Huang*. A probabilistic framework with the gradient-based method for multi-objective land use optimization. *International Journal of Geographical Information Science*, 37(5):1128–1156, 2023.
- [3] Fei Wang†, Shiqi Yao†, **Haowen Luo**, and Bo Huang*. Estimating high-resolution pm2.5 concentrations by fusing satellite aod and smartphone photographs using a convolutional neural network and ensemble learning. *Remote Sensing*, 14(6):1515, 2022.
- [4] Jionghua Wang†, **Haowen Luo**†, Wenyu Li, and Bo Huang*. Building function mapping using multisource geospatial big data: A case study in shenzhen, china. *Remote Sensing*, 13(23), 2021.
- [5] Qiuping Li*, **Haowen Luo**, and Xuechen Luan. Multistage impacts of the heavy rain process on the travel speeds of urban roads. *ISPRS International Journal of Geo-Information*, 10(8), 2021.
- [6] Sheng-Jie Liu†, **Haowen Luo**†, and Qian Shi*. Active ensemble deep learning for polarimetric synthetic aperture radar image classification. *IEEE Geoscience and Remote Sensing Letters*, 18(9):1580–1584, 2021.
- [7] Shengjie Liu, **Haowen Luo**, Ying Tu, Zhi He*, and Jun Li*. Wide contextual residual network with active learning for remote sensing image classification. In *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*, pages 7145–7148, 2018.

AWARDS

- ESRI Young Scholars Award (YSA) 2022 - Champion (Group Project) Jul 2022
 - BAO Wenwei Linda; LI, Wenyu; LUO, Haowen; ZENG, Bincheng Joyce
- Geneva International Exhibition of Inventions (Gold Medal) Mar 2021
 - PhotoAir: Measuring Indoor and Outdoor PM2.5 with a Mobile Phone.
- IEEE GRSS Data Fusion Contest 2020: Global Land Cover Mapping with Weak Supervision. Mar 2020
 - Rank 4(Development Phase)/7(Track 1)/11(Track 2) in 159 registrations (33 teams entered the final phase).
- Alibaba Cloud German AI Challenge 2018: AI For Earth Observation. Feb 2019
 - Rank 18(Preliminary)/29(Semi-Finals) in 1329 teams.
- Honorable Mention Award in the 2nd SYSU Public Governance Data Analysis Competition. Jun 2018
 - One of the top-10 awardees in the competition.

PROJECT

AN ADAPTABILITY STUDY OF URBAN POPULATION HEALTH AND PUBLIC HEALTH SYSTEM

- Tech Support Guangzhou, Mar 2018 – Apr 2019

- Found the relationship between temperature, taxi to hospitals and urgent patient by the mathematical statistics method, explored the temporal and spatial distribution of sudden diseases under extreme weather through statistical and spatial analysis methods;
- Built prediction model of sudden diseases under extreme weather based on multi-source spatial data;
- National Undergraduate Innovative Experiment Project (No.201810558049). Received funding of 10,000 CNY from the Ministry of Education of China.

URBAN TRAFFIC CONGESTION IDENTIFICATION AND PREDICTION BASED ON SOCIAL MEDIA DATA

- **Leader** Guangzhou, Mar 2017 – Aug 2018
 - Developed novel method to build the model of urban traffic congestion identification and prediction from social media data, using web spider techniques, cluster analysis and factor analysis methods.
 - Analyzed data from Weibo using Text-CNN, visualized traffic congestion in Guangzhou city area.
 - National Undergraduate Innovative Experiment Project (No.201710558084). Received funding of 10,000 CNY from the Ministry of Education of China;
 - Won the Excellence Award. Received follow-up funding of 10,000 CNY.

PROFESSIONAL EXPERIENCE

Department of Geography and Resource Management, The Chinese University of Hong Kong

- **Research Assistant** Hong Kong, Oct 2020 – Jul 2021
 - Developed deep learning model for PM2.5 feature extraction.
 - Built a probability model to applied gradient descending algorithm for land use spatial optimization.

Institute of Future Cities, The Chinese University of Hong Kong

- **Student Helper** Hong Kong, Oct 2019 – Feb 2020
 - Labeled the local climate zone samples.

Center of Integrated Geographic Information Analysis (CIGNA), Sun Yat-sen University

- **Research Assistant (Student Helper)** Guangzhou, Jul 2017 – Jun 2019
 - Developed a software for cellular signaling data analysis and visualization;
 - Applied deep learning to remote sensing image classification;
 - Processed and analyzed street view imagery data.

Institute of Urbanization, Sun Yat-sen University

- **Research Assistant (Student Helper)** Guangzhou, Jul 2017 – Feb 2019
 - Developed data crawlers to collect data, including intellectual property records, POIs, etc;
 - Visualized research results and developed interactive maps by Mapbox and Echart;
 - Processed the cellular signaling data in Guangzhou with Tianhe-2;
 - Analyzed data from a Chinese online diagnosis platform, and explored the spatial relevance of Internet consultation by spatial autocorrelation, graph theory and other methods.

Greenhope Technology Co. Ltd

- **New Media Operation Intern** Guangzhou, Nov 2018 – Dec 2018
 - Translated scientific papers in ophthalmology into Chinese; Edited and typeset Wechat Push Message.

Augur Intelligence Technology Co., Ltd

- **Data Analyst Intern** Guangzhou, Sep 2018 – Oct 2018
 - Helped to developed real estate database for Guangzhou Land Resources and Urban Planning Bureau.

GIS Lab, School of Geography and Planning, Sun Yat-sen University

- **Teaching Assistant (Student Helper)** Guangzhou, Jul 2017 – Aug 2018
 - Built FTP sharing service for teaching; Helped to maintain and update software and hardware.

RESEARCH EXPERIENCE

ARTIFICIAL INTELLIGENCE PLANNING FOR SMART CITY

- Hong Kong, Sep 2019 – Present
 - Proposed probability-based multi-objective land use optimization (pMOLU) model.
 - Applied Gradient-based algorithm to automatically generate an optimal land use planning scenario in an effective and efficient way.

DEEP LEARNING FOR REMOTE SENSING IMAGE CLASSIFICATION

- Guangzhou and Hong Kong, Sep 2017 – Present
 - Developed Sample-Set Maker (in Python) to manage samples of RSI for deep learning. The package has starred 23 star and 16 fork in Github.
 - Proposed a WCRN with active learning for remote sensing classification, which achieved good machine generalization with a limited number of training samples. Published in IGARSS 2018.

- Proposed St-SS-pGRU for classification, which uses 1D-convolution to shorten the sequence, and ensemble recurrent units to improve performance.
- Proposed active ensemble DL model for classification, and the work is published in GRSL.

DTRIP: A CUSTOMIZED TRIP ROUTE ARRANGEMENT SYSTEM BASED ON DEEP LEARNING

Guangzhou and Hong Kong, Mar 2018 – Jun 2020

- Applied the Long Short-Term Memory (LSTM) model to analyze the comments in Mafengwo (a travel site), designed an algorithm to recommend sites and plan travel route;
- Built a website for interacting based on Flask, ArcGIS(version 1)/MapBox(version 2) and JQuery.

MEASUREMENT OF HUMAN PERCEPTIONS IN A LARGE-SCALE URBAN AREA

Guangzhou, Feb 2019 – May 2019

- Measure emotional perceptions of street-view images based on deep learning, explore the relationship between human perceptions and built-up environment, and analyze spatial dependence and spatial heterogeneity of human perceptions.
- Masked Mean Square Error is used as the loss function to reduce the number of models and training time. Threshold method is used to eliminate the noise data to make full use of incomplete samples.

SKILLS

PROGRAMMING

- C/C++, Python, Matlab, HTML, JavaScript;

APPLICATION SOFTWARE

- ArcGIS, ENVI, SPSS, T_EX, Office, Adobe Photoshop/Lightroom, etc;

LANGUAGE

- Cantonese(native), Mandarin(native), English(fluent).

TECH SITE

- [1] Blog: <http://blog.rimoe.xyz>.
- [2] Github: <https://github.com/coderimoe>.

[Curriculum Vitae compiled on 2024-05-15]