Guangyuan Weng

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177 Huntington Ave, FL 2, Boston, MA 02115

EDUCATION

Northeastern University Sept. 2021 - Present

Ph.D., Computer and Information Sciences *Boston, MA*

· Advisor: Prof. Esteban Moro

· Research Interests: Computational Social Science, Data Mining, Artificial Intelligence

ShanghaiTech University Sept. 2017 - July 2021

B.E., Computer Science and Technology *Shanghai, China*

· Advisors: Prof. David J. Crandall (Indiana University Bloomington), Prof. Haipeng Zhang

RESEARCH EXPERIENCE

Social Urban Networks Lab, Network Science Institute Jan. 2024 - Present

Research Assistant (Advisor: Prof. Esteban Moro) *Boston, MA*

· Introduced an empirical method to identify mobility borders in US cities by analyzing neural embeddings of human mobility trajectories

· Validated the effectiveness of the word2vec model in modeling and embedding human mobility patterns

· Quantitatively evaluated the contributions of physical barriers, points of interest (POI), and demographic factors in shaping mobility borders

Wormpex AI Research May 2023 - Aug. 2023

Research Intern (Advisor, Mentors: Prof. Gang Hua, Dr. Bo Liu, Dr. Haoxiang Li) *Bellevue, WA*

· Explored an innovative memory structure that merges conventional retrieval and classification methods, focusing on long-tail image recognition

· Developed an importance module based on an self-attention mechanism for the retrieved K-Nearest Neighbors

· Extended the applicability to real-world scenarios, achieving State-of-the-Art performance in ImageNet-LT datasets

IU Computer Vision Lab, Indiana University July 2020 - June 2021

Research Intern (Advisor: Prof. David J. Crandall) *Bloomington, IN*

· Focused on recognizing human actions in videos captured from *egocentric cameras* (e.g., Google Glass)

· Discovered how action-object associations in datasets influence the generalization ability of action recognition models

· Modeling the positions and sizes of hands and objects in the videos utilizing *graph convolutional neural network*

Mobile Autonomous Robotic Systems Lab (MARS Lab) Sept. 2018 - Jan. 2020

Undergraduate Research Assistant (Advisor: Prof. Sören Schwertfeger) *Shanghai, China*

· Built a mapping/SLAM robot with super-precise timing and localization with hardware synchronization

· Designed a *printed circuit board* (PCB) mounted on a field robotics research platform to produce synchronized signal for all sensors (e.g., IMUs and lidars) and reduce noise of trigger signal

· Generated three high-resolution and sensor-dense datasets to evaluate the performance of SLAM algorithms

PUBLICATIONS

Beyond Distance: Mobility Neural Embeddings Reveal Visible and Invisible Barriers in Urban Space

· **Weng, Guangyuan**, Kim, Minsuk, Ahn, Yong-Yeol, Moro, Esteban

· Under Review

Action Recognition based on Cross-Situational Action-object Statistics

· Tsutsui, Satoshi, Wang, Xizi, **Weng, Guangyuan**, Zhang, Yayun, Crandall, David, Yu, Chen

· *12th IEEE International Conference on Development and Learning* (ICDL 2022)

Advanced Mapping Robot and High-Resolution Dataset

· Chen, H., Yang, Z., Zhao, X., **Weng, G.**, Wan, H., Luo, J., Ye, X., Zhao, Z., He, Z., Dong, T., Schwertfeger, S.

· Journal of *Robotics and Autonomous Systems*

Towards Generation and Evaluation of Comprehensive Mapping Robot Datasets

· Chen, H., Zhao, X., Luo, J., Yang, Z., Zhao, Z., Wan, H., Ye, X., **Weng, G.**, He, Z., Dong, T., Schwertfeger S.

· Workshop on Dataset Generation and Benchmarking of SLAM Algorithms for Robotics and VR/AR of the *2019 IEEE International Conference on Robotics and Automation* (ICRAW 2019)

PEER-REVIEWED CONFERENCE PRESENTATIONS (NON-ARCHIVAL)

Revealing Invisible Barriers in US Cities through Human Mobility and Unsupervised Learning

· **Weng, Guangyuan**, Kim, Minsuk, Ahn, Yong-Yeol, Moro, Esteban

· *11th International Conference on Computational Social Science* (IC2S2 2025), **Plenary Talks (1.5%)**

ACTIVITIES

The Summer Institutes in Computational Social Science (SICSS-Penn) June 2024
University of Pennsylvania *Philadelphia, PA*

2018 IEEE ComSoc Summer School on Fog Computing June 2018
IEEE ComSoc, OpenFog Consortium *Shanghai, China*

TEACHING

CS5100 Foundations of Artificial Intelligence (25 Fall) Sept. 2025
Head Teaching Assistant, Northeastern University *Boston, MA*

CS5520 Mobile Application Development (24 Spring, 24 Fall, 25 Spring, 25 Summer) May 2025
Head Teaching Assistant, Northeastern University *Boston, MA*

CS4520 Mobile Application Development (24 Summer 1) May 2024
Teaching Assistant, Northeastern University *Boston, MA*

CS5330 Pattern Recognition and Computer Vision (21 Fall, 22 Fall) Sept. 2022
Teaching Assistant, Northeastern University *Boston, MA*

HONORS

ShanghaiTech Merit Students (2019-2020, Top 5%) Dec. 2020
ShanghaiTech University

ShanghaiTech Scholarship for Outstanding Undergraduate Students (RMB 30,000) Dec. 2020
ShanghaiTech University

Global Talent Attraction Program, International Summer Research Fellowship ($ 4,000) Feb. 2020
Indiana University Bloomington

SKILLS

Languages	Chinese (Native), English (TOEFL-iBT 112)
Computer Languages	Python, R, SQL, C++, C, Rust, MATLAB, AWK
Protocols & APIs	PyTorch, scikit-learn, Robot Operating System (ROS), Processing (Java), LaTeX