Guangyuan Weng

(+1) 781 873 9531 ⋄ cnzxwgy@gmail.com ⋄ gweng.netlify.app

EDUCATION

Northeastern University Sept. 2021 - May 2027 (expected)
Ph.D., Computer and Information Sciences (Advisor: Prof. Esteban Moro) *Boston, MA*

· Research Interests: Recommenders, Retrieval-Augmented Generation, Responsible AI & Fairness, Geospatial Foundation Models, Agentic simulation and AI Systems, Data Mining

ShanghaiTech University Sept. 2017 - July 2021
B.E., Computer Science and Technology (Advisor: Prof. David J. Crandall, Indiana University) *Shanghai, China*

· Thesis: *From the Outside-In: Investigating Action-object Cross-situational Statistics for Action Recognition*

RESEARCH EXPERIENCE

Social Urban Networks Lab, Network Science Institute Jan. 2024 - Present
Research Assistant (Advisor: Prof. Esteban Moro) *Boston, MA*

· Built large-scale agent-based simulation of human–AI feedback loops to quantify long-term effects of next-venue recommenders on exposure fairness, segregation, and venue popularity; designed guardrails/policies and off-policy evaluation.

· Developed neural mobility embeddings and unsupervised discovery of urban barriers; created privacy-aware analysis workflows on billion-scale device traces; implemented scalable pipelines (Python/SQL/PyTorch).

· Led GenAI/RAI evaluation for recsys: robustness under distribution shift, calibration/uncertainty, and fairness metrics across demographics & geographies; surfaced counterfactual diagnostics for causal interpretation.

Wormpex AI Research May 2023 - Aug. 2023
Research Intern (Mentors: Dr. Gang Hua (IEEE Fellow), Dr. Bo Liu, Dr. Haoxiang Li) *Bellevue, WA*

· Developed and implemented novel algorithms for long-tail image recognition, merging retrieval and classification methods to enhance model performance on large-scale datasets.

· Designed a self-attention-based importance module for Retrieval-Augmented Generation, improving accuracy and scalability.

· Utilized Python and PyTorch for model development, testing, and deployment, automating training and evaluation workflows.

· Collaborated with a cross-functional team to deliver research outcomes aligned with business and engineering needs.

Visual Intelligence Lab, Northeastern University Sept. 2021 - May 2023
Research Assistant (Advisor: Prof. Huaizu Jiang) *Boston, MA*

· Conducted research on algorithms and software design for vision-language models, focusing on few-shot learning, compositional reasoning, and transfer learning from synthetic to real-world data

· Developed and implemented software modules in Python and C++ for model evaluation and automation

IU Computer Vision Lab, Indiana University July 2020 - June 2021
Research Intern (Advisor: Prof. David J. Crandall) *Bloomington, IN*

· Conducted research in computer vision and machine learning, focusing on action recognition in egocentric video data.

· Investigated the influence of action-object associations on model generalization using graph convolutional neural networks and advanced algorithms.

Mobile Autonomous Robotic Systems Lab (MARS Lab) Sept. 2018 - Jan. 2020
Research Assistant (Advisor: Prof. Sören Schwertfeger) *Shanghai, China*

· Designed and built a mapping/SLAM robot with precise timing and localization, integrating hardware and software for distributed sensor synchronization on Robot Operating System (ROS).

· Developed C++ and Python scripts for automation of data collection, sensor calibration, and SLAM algorithm evaluation.

· Generated and maintained high-resolution, sensor-dense datasets to benchmark distributed systems and algorithms in robotics.

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 (2025)

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* (JRAS), Volume 136, 2020, Pages 103559

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

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 (Top 1.5%)**

TEACHING EXPERIENCE

Northeastern University

Head Teaching Assistant, CS5100 Foundations of Artificial Intelligence (Fall 2025)

Head Teaching Assistant, CS5520 Mobile Application Development (Spring 2024, Fall 2024, Spring 2025, Summer 2025)

Teaching Assistant, CS4520 Mobile Application Development (Summer 2024)

Teaching Assistant, CS5330 Pattern Recognition and Computer Vision (Fall 2021, Fall 2022)

HONORS

ShanghaiTech University

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

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

Indiana University Bloomington

Global Talent Attraction Program, International Summer Research Fellowship (2020, $ 4,000)

SKILLS

Programming Languages	Python, C++, C, Java, R, SQL, Rust, MATLAB, AWK, HTML, CSS, Shell
Frameworks & Tools	PyTorch, scikit-learn, Robot Operating System (ROS), Amazon Web Services, Google Cloud Platform, Processing (Java), Git, VS Code, Visual Studio, XCode, IntelliJ IDEA
Technical Areas	Software Engineering, Algorithms, Distributed Systems, Machine Learning, Artificial Intelligence, Data Mining, Automation, Site Reliability, Scalable Systems, Compilers, Database, Networking, Software Design

ADDITIONAL INFORMATION

- Experienced in developing, testing, deploying, and maintaining scalable software solutions in both research and engineering environments.
- Automated routine tasks and data pipelines to improve research and engineering productivity.
- Strong background in applying computer science fundamentals, including data structures, algorithms, and software design, to solve real-world challenges.
- Collaborative team member with experience working in diverse, cross-functional teams on high-impact projects.