Guangyuan Weng

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EDUCATION

Northeastern University Sept. 2021 - Present

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

· Research Interests: Computational Social Science, Data Mining, Deep Learning

ShanghaiTech University Sept. 2017 - July 2021

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

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

RESEARCH EXPERIENCE

Wormpex AI Research May 2023 - Nov. 2023

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

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

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

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

Visual Intelligence Lab, Northeastern University Sept. 2021 - May 2023

Research Assistant (Advisor: Prof. Huaizu Jiang) *Boston, MA*

· Explored visual models' induction capability by few-shot learning and compositional reasoning of novel concepts

· Learnt novel concepts contrastively by modeling them using synthetic images and graphs

· Transferred lessons learnt from synthetic data to real world settings for better human-object relation representation

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*

Financial Intelligence Lab, ShanghaiTech University Mar. 2020 - June 2021

Research Assistant (Advisor: Prof. Haipeng Zhang, Prof. Qing Ke) *Shanghai, China*

· Predicted human *Venture Capital* (VC) investment success of early-stage start-ups using *graph neural network*

· Discovered the influencing factors of VC investment behavior, e.g., academic achievements, concentration level, etc.

· Learnt node-level representation in each time period using self-attention and fine-tuning via supervised link prediction and node classification

PUBLICATIONS

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)

ACADEMIC PROJECTS

Automation of Hi-C Guided Scaffolding Onto Chromosome Level May 2020 - Jun 2020

· Evaluated a software (3d-DNA) algorithms and explored the underlying mechanisms by utilizing the Hi-C (a high-throughput 3D genome sequencing technology) data of a rodent (i.e., desert mouse)

· Customized an optimized set of parameters for *successfully scaffolding* this species DNA information to 24 chromosomes; Python, and AWK used

Music Composition by Markov-Like Models Dec 2019 - Jan 2020

· Proposed two *Markov-Like Models* based on music theory, i.e., first-order and second-order models

· Trained multiple levels of *Markov-Like Models* on piano pieces from the modern era and improved the models' ability to generate new pieces; Python used

Trilogy of Life Jul 2018

· Advisor: Jayson Haebich, Cambridge School of Art

· Represented a story by using *projection mapping* with Processing (Java); completed the project within 24 hours

Nurse Turtlebot Jun 2018

· Recognized *gesture and speech* to deliver items to patients by using turtle robot

· Performed *Simultaneous Localization and Mapping* (SLAM) in a complicated area

· Captured gestures by *Leap Motion*; finished the project within 24 hours in *The Hack 2018* (Hackathon)

ACTIVITIES

CS5330 Pattern Recognition and Computer Vision (21 Fall, 22 Fall) Sept. 2022

Teaching Assistant, Northeastern University *Boston, MA*

Upenn Curiosity AI Robotics and Smart Material Summer Camp Aug. 2019

Teaching Assistant supervised by Prof. Jianbo Shi, GRASP Lab, University of Pennsylvania *Shanghai, China*

2018 IEEE ComSoc Summer School on Fog Computing June 2018

IEEE ComSoc, OpenFog Consortium *Shanghai, China*

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, C++, C, Rust, MATLAB, AWK
Protocols & APIs	PyTorch, scikit-learn, Robot Operating System, Processing (Java), LaTeX