JIUHONG XIAO

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EDUCATION

New York University Sep 2022 - Present
Ph.D. in Electronic Engineering GPA: 4.0/4.0

New York University Jan 2020 - Dec 2021
M.S. in Computer Science GPA: 3.94/4.0

University of Science and Technology Beijing Aug 2015 - Jun 2019
B.Eng. in Intelligence Science and Technology GPA: 3.65/4.0, Major GPA: 3.84/4.0

RESEARCH INTERESTS

Computer Vision, Robotics, Visual Geo-localization, Image Retrieval

PUBLICATIONS

Visual Geo-localization with Self-supervised Representation Learning 2024
Jiuhong Xiao, *Gao Zhu, Giuseppe Loianno*
The 18th European Conference on Computer Vision ECCV (2024), Submitted.

Long-range UAV Thermal Geo-localization with Satellite Imagery 2023
Jiuhong Xiao, *Daniel Tortei, Eloy Roura, Giuseppe Loianno*
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (2023), 5820-5827.

Identity Preserving Loss for Learnt Image Compression 2022
Jiuhong Xiao, *Lavisha Aggarwal, Prithviraj Banerjee, Manoj Aggarwal, Gerard Medioni*
Computer Vision and Pattern Recognition (CVPR) Workshops (2022), 517-526.

Multi-Robot Collaborative Perception with Graph Neural Networks 2022
Yang Zhou, ***Jiuhong Xiao****, Yue Zhou, Giuseppe Loianno*
IEEE Robotics and Automation Letters 7, no. 2 (2022), 2289-2296.

Toward Coordination Control of Multiple Fish-Like Robots: Real-Time Vision-Based Pose Estimation and Tracking via Deep Neural Networks 2021
Tianhao Zhang, ***Jiuhong Xiao****, Liang Li, Chen Wang, Guangming Xie*
IEEE/CAA Journal of Automatica Sinica 8, no. 12 (2021), 1964-1976.

Image Encryption Algorithm Based on Memristive BAM Neural Networks 2018
Jiuhong Xiao*, Weiping Wang, Meiqi Wang*
IEEE 3rd International Conference on Data Science in Cyberspace (2018), 205-212.

The Stability of Memristive Multidirectional Associative Memory Neural Networks With Time-varying Delays in the Leakage Terms via Sampled-data Control 2018
Weiping Wang, Xin Yu, Xiong Luo, Long Wang, Lixiang Li, Juergen Kurths, Wenbing Zhao, ***Jiuhong Xiao***
PLOS ONE 13, no. 9 (2018), e0204002.

EXPERIENCE

Amazon Jan 2022 - Aug 2022
Applied Scientist
• Worked in Amazon Go/Just walk out (JWO) technology.
• Built a multi-view occlusion detection system to reduce errors caused by unknown occluders.

New York University Sep 2021 - Dec 2021
Graduate Teaching Assistant
• Supported Deep Learning course with 100+ students.
• Created the homework materials, graded assignments, and answered students' questions for homework and lectures.

Amazon May 2021 - Aug 2021
Applied Scientist Intern
• Developed a VAE-based compression method specific to face images, achieving **5x** compression ratio of High Efficiency Video Coding (HEVC) format with acceptable image quality.

• Jointly optimized compression model with face recognition downstream model, and reduced the file size to **27.4%** of HEVC with lower False Rejection Rate (FRR) under same False Acceptance Rate (FAR).

New York University May 2020 - May 2021
Research Assistant (advised by Alfredo canziani, Yann LeCun)
• Implemented an offline autonomous driving policy-training pipeline based on annotated lane maps with limited historical driving data.
• Designed the training strategy and specific loss functions to reduce lane annotation cost and improve the generalization performance of the policy for different lane layouts.
• Increased mean survival rate from 75% to **86%** compared to the baseline offline RL method to reduce collision and offroad crashes.

Intelligent Biomimetic Design Laboratory, Peking University Jun 2019 - Jan 2020
Research Assistant (advised by Guangming Xie)
• Implemented a fish pose estimation method fusing top-down and bottom-up paradigms, increasing mAP by **7.9%** and **10.9%** compared with classical methods using single paradigm.
• Developed a fish pose tracking system based on keypoint matching, reducing tracking error by **72.7%**.
• Built a robotic fish dataset with over **1,300** annotated frames as the benchmark for robotic fish pose estimation and the foundation of fish group control.

SELECTED PROJECTS

Autonomous Drone Inspection with Deep Reinforcement Learning Sep 2021 - Dec 2021
Advisors: Lerrel Pinto. New York University
- Developed a reinforcement learning framework for real-life UAV autonomous inspection experiments with ROS.
- Analyzed the impact of different environment setups on inspection performance.

Autodetection: An End-to-end Autonomous Driving Detection System Jan 2020 - May 2020
Advisors: Yann LeCun, Alfredo Canziani. New York University
- Won **2nd** place in the general ranking on roadmap prediction and object detection task.
- Built an end-to-end autonomous driving detection system to predict bird-view roadmap and objects from multi-view images without measurement of camera parameters.
- Improved model performance with feature pyramid network and self-supervised learning by **7.72%** mAP on roadmap and **14.35%** mAP on detection.

A Survey of Bayesian Methods for Deep Learning Jan 2020 - May 2020
Advisor: Joan Bruna. New York University
- Surveyed recent works that apply principles of Bayesian inference to deep learning and noted special applications of Bayesian deep learning.
- Implemented PyTorch version of Bayesian methods like SGLD, Deep Ensembles, and MCDropout.

AWARDS AND GRANTS

IROS 2023 Workshop on Localization Scholarship	2023
Ernst Weber Fellowship, NYU	2023 - 2024
School of Engineering Fellowship, NYU	2022 - 2023
Excellence Award for Undergraduate Thesis, USTB	2019
Peoples Scholarship, USTB	2015 - 2018
First Prize, Mathematical Modeling Competition, Beijing	2017

SKILLS

Programming	Python, C&C++.
Platform/tools	Pytorch, OpenCV.
Languages	English, Mandarin.