XIANGBO GAO (BARRY)

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xiangbogao.com   Google Scholar (Xiangbo Gao)

EDUCATION

MS in Robotics, University of Michigan	Expected Apr. 2025
BS in Computer Science & Mathematics (Double Major), University of California, Irvine	Sep. 2018 - Mar. 2023
Summer Session, University of California, Berkeley	June 2019 - Sep. 2019

Related Courses: Advanced CV, ML, DL, AI, ROS, Mathematics for Robotics

SKILLS

Programming Language:	Python, C/C++, Matlab
Software:	PyTorch, ROS, OpenMMlab, Carla Simulator
Research/Development Backgrounds:	ADAS, Perception, Computer Vision, Online Map Construction, Motion Prediction

PUBLICATIONS

1. **X Gao[1]**, et al. "Scale-free and Task-agnostic Attack: Generating Photo-realistic Adversarial Patterns with Patch Quilting Generator", International Conference on Acoustics, Speech and Signal Processing, 2024 *Paper link*
2. **X Gao[3]**, et al. "Sample hardness based gradient loss for long-tailed cervical cell detection", International Conference on Medical Image Computing and Computer-Assisted Intervention, pp. 109-119. Springer, Cham, 2022 *Paper Link*

INTERNSHIPS

Perception Algorithms Researcher   Apr. 2023 - July 2023
Anhui Cowa ROBOT Co., Ltd.   Shanghai, China
- Online HD Map Construction with Flow Map Prior, achieving 3.2% higher mAP than the baseline and 13th place in the CVPR Camera-based online HD map construction challenge 2023.
- Motion Prediction with Historical Trajectories Clustering which solved over 95% of the existing corner cases.

Full-stack Software Developer   June 2020 - Aug. 2020
Tandll Investment Management, Ltd   Shenzhen, China
- Developed and deployed a management web using Django, MySQL, and React, which is currently in active use.

Software Developer   Feb. 2019 - June 2019
Calit 2, University of California, Irvine   Irvine, CA, USA
- Developed a virtual reality (VR) teaching tool for the MA6 Mask Aligner.

RESEARCH EXPERIENCE & LEADERSHIP

University of Michigan, Ann Arbor, MI
Multispectral Video Object Detection   Dec. 2023 - present
- Improving pedestrian detection performance under extremely low light conditions by spatially and temporally fusing RGB and thermal imags.
- Proposing a plug-and-play spatio-temporal fusion module based on MLPMixer and deformable attention, enabling our model to currently achieve better LAMR and mAP results on the Kaist dataset than existing models.

Institute of Computer Vision, Shenzhen University, China
Adversarial Attack with Semantic Pattern   Apr. 2021 - Oct. 2022
- Proposed a novel PQ-GAN training strategy that learned a series of cascaded generators to manipulate image patterns at varying scales, demonstrating state-of-the-art attack strength and robustness against different defense algorithms.

Long-tailed Cervical Cell Detection   May 2021 - Jan. 2022
- Proposed Grad-Libra Loss that uses gradients to dynamically calibrate sample hardness and rebalance gradients.

University of California, Irvine, CA
Auto-generated Graphical Model in the Autonomous Driving System   May 2022 - Dec. 2022
- Designed and created a multi-domain ADAS dataset for various driving scenarios using the CARLA simulator.
- Developed a probabilistic LSTM structure that encodes states as variational embeddings using Pytorch.

ZerO Waste Anteaters   Sep. 2020 – Apr. 2022
- Led a team of eight to explore waste recognition solutions, achieving ~0.94 ACC for the image classification task and ~0.76 mAP for the object detection task.
- Designed an introductory Image Recognition tutorial and side projects for students interested in the field.

COMPETITIONS

Rank 13th	CVPR Camera-based online HD map construction challenge 2023	May 2023
Outstanding Award	Netease Hackathon Competition	June 2020
Rank 1st	Machine Learning Hackathon, University of California, Irvine, CA	April 2020
Rank 2nd at UCI	Google Hash Code 2020 Algorithms Competition, Irvine, CA	Feb. 2020

LANGUAGES

Chinese (Native), English (Proficient)