

Jinhyung (David) Park

jindapark.github.io ♦ 703-414-9428 ♦ jinhyun1@andrew.cmu.edu

RESEARCH INTERESTS

Fields: Computer Vision, Robotics, Machine Learning

Topics: Joint 2D/3D Perception, Human Shape and Motion Modeling, Multi-Modal Learning

EDUCATION

Carnegie Mellon University

Aug 2022 - Present

Ph.D in Robotics (Advisor: Prof. Kris Kitani)

GPA: 4.0/4.0

Carnegie Mellon University

Aug 2018 - May 2022

Bachelor of Science in Artificial Intelligence

GPA: 4.0/4.0

PUBLICATIONS

- [1] [Generalizable Neural Human Renderer](#)
Mana Masuda, **Jinhyung Park**, Shun Iwase, Rawal Khirodkar, Kris Kitani
In Submission, 2024
- [2] [Flexible Depth Completion for Sparse and Varying Point Densities](#)
Jinhyung Park, Yu-Jhe Li, Kris Kitani
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- [3] [Multi-Person 3D Pose Estimation from Multi-View Uncalibrated Depth Cameras](#)
Yu-Jhe Li, Yan Xu, Rawal Khirodkar, **Jinhyung Park**, Kris Kitani
In Submission, 2023
- [4] [Azimuth Super-Resolution for FMCW Radar in Autonomous Driving](#)
Yu-Jhe Li, Shawn Hunt, **Jinhyung Park**, Matthew O'Toole, Kris Kitani
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023
- [5] [Time Will Tell: New Outlooks and A Baseline for Temporal Multi-View 3D Object Detection](#)
Jinhyung Park*, Chenfeng Xu*, Shijia Yang, Kurt Keutzer, Kris Kitani, Masayoshi Tomizuka, Wei Zhan
International Conference on Learning Representations (ICLR), 2023
Oral (Top 5% of accepted papers)
- [6] [DetMatch: Two Teachers are Better Than One for Joint 2D and 3D Semi-Supervised Object Detection](#)
Jinhyung Park, Chenfeng Xu, Yiyang Zhou, Masayoshi Tomizuka, Wei Zhan
European Conference on Computer Vision (ECCV), 2022
- [7] [Modality-Agnostic Learning for Radar-Lidar Fusion in Vehicle Detection](#)
Yu-Jhe Li, **Jinhyung Park**, Matthew O'Toole, Kris Kitani
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2021
- [8] [Multi-Modality Task Cascade for 3D Object Detection](#)
Jinhyung Park, Xinshuo Weng, Yunze Man, Kris Kitani.
The 32nd British Machine Vision Conference (BMVC), 2021
- [9] [Crack Detection and Refinement via Deep Reinforcement Learning](#)
Jinhyung Park, Yi-Chun Chen, Yu-Jhe Li, Kris Kitani
IEEE International Conference on Image Processing (ICIP), 2021
[Best Industry Impact Award]
- [10] [All-in-One Drive: A Large-Scale and Comprehensive Perception Dataset with High-Density Long-Range Point Cloud](#)
Xinshuo Weng, Yunze Man, Dazhi Cheng, **Jinhyung Park**, Matthew O'Toole, Kris Kitani
In Submission, 2020

- [11] [Protecting User Privacy: Obfuscating Discriminative Spatio-Temporal Footprints](#)
Jinhyung Park, Erik Seglem, Eric Lin, Andreas Zuffe
ACM SIGSPATIAL Workshop on Recommendations for Location-based Services and Social Networks, 2017
- [12] [Real-Time Bayesian Micro-Analysis for Metro Traffic Prediction](#)
Eric Lin, **Jinhyung Park**, Andreas Zuffe
ACM SIGSPATIAL Workshop on Smart Cities and Urban Analytics, 2017

RESEARCH EXPERIENCE

Carnegie Mellon University - The Robotics Institute

Jan 2020 - Present

Advisor: Prof. Kris Kitani

- Investigating 3D-focused self- and semi-supervised learning from multi-camera videos.
- Developed a generalizable human NeRF pipeline enabling rendering from novel views and poses from a monocular video.
- Built an adaptive framework for depth prediction that addresses the divergence between methods for monocular depth estimation and those for sparse depth completion.
- Proposed a novel teacher-student consistency framework that encourages multimodal fusion and is more robust under adverse weather conditions and severe failure of one modality.
- Developed bidirectional, recursive fusion between semantic RGB features and geometric point cloud features for cascaded 2D segmentation and 3D detection.
- Proposed a two-stage framework for iteratively refining segmentation predictions using an A3C-trained RL agent. Our agent preserves overall structure while closing gaps and refining details.
- Extensively investigated the impacts of varying LiDAR sensor noise, range, and sampling patterns on 3D detection methods for the development of a large-scale synthetic driving dataset.

UC Berkeley - Mechanical Systems Control Lab

Jul 2021 - Oct 2022

Advisors: Prof. Tomizuka Masayoshi & Dr. Wei Zhan

- Investigated long-term temporal fusion for more accurate object localization and proposed a history duration and image resolution trade-off for stronger multi-view stereo localization potential.
- Leveraged box-level consistency constraints between objects detected in 2D RGB and 3D LiDAR to generate more accurate pseudo-labels for multi-modality semi-supervised object detection.

George Mason University

May 2017 - Sep 2017

Advisor: Prof. Andreas Zuffe

- Identified geolocation tags most discriminative of a twitter user's identity using entropy of location patches and minimally obfuscated Twitter user location traces to protect their identities.

INDUSTRY EXPERIENCE

Meta

May 2024 - Present

Research Scientist Intern at Reality Labs

- Built a novel parametric body model with explicit decoupling of body shape and skeleton.
- Our model enables fine-grained customization and transfer of external and internal body attributes and incorporates realistic non-linear and sparse pose correctives.

Meta

Jun 2023 - Aug 2023

Research Scientist Intern at XR Scene

- Developed a novel query-based 2D-to-3D panoptic integration and refinement pipeline.

- Established a new speed-performance Pareto frontier for joint 3D reconstruction and panoptic segmentation.

Zensors Inc., Computer Vision Startup

May 2019 - Dec 2019

Software Development & Machine Learning Intern

- Created a framework for deploying ML models to production on AWS Kubernetes with scaling on demand. Built 2D detection and human keypoint models using the Detectron repository.

TEACHING EXPERIENCE

Computer Vision (16-720), CMU; Singapore.

May 2022 - May 2023

Instructors: Prof. Kris Kitani, Prof. Matthew O'Toole

Introduction to Deep Learning (11-785), CMU.

Dec 2019 - May 2022

Instructor: Prof. Bhiksha Raj

AWARDS & HONORS

NSF GRFP Fellowship 2023

University Honors and School of Computer Science Honors 2022

Undergraduate Honors Thesis: *Cross-Modality Supervised Learning for 3D Object Detection* 2022

CRA Undergraduate Researcher Award Honorable Mention 2022

Best Industry Impact Award from ICIP 2021

Goldwater Scholarship 2021

PROFESSIONAL SERVICE

Reviewer: CVPR, ICCV, NeurIPS, ICLR, AAAI, TPAMI

SKILLS

Languages: Python, Java, Matlab, C, C++, R, Javascript, React, SMLNJ

Frameworks: PyTorch, TensorFlow, AWS, Docker, Kubernetes, GraphQL, PostgreSQL, RabbitMQ