Jianren Wang

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Education

Carnegie Mellon University **Pittsburgh, PA**
- Ph.D./MS in Robotics *Aug. 2020 - Present*
- GPA: 4.0/4.0
- Advisor: Abhinav Gupta

Carnegie Mellon University **Pittsburgh, PA**
- Master of Science in Mechanical Engineer *Aug. 2017 - May 2018*
- GPA: 4.0/4.0
- Advisor: David Held

Shanghai Jiao Tong University **Shanghai, China**
- B.S. (Summa Cum Laude) in Ocean Engineering *Jun. 2013 - Jun. 2017*
- GPA: 4.0/4.0
- Valedictorian of 2017
- Advisor: Hang Zhao

Internship

Carnegie Mellon University **Pittsburgh, PA**
- Research Associate, Robotics Institute, School of Computer Science *Aug. 2018 - Dec. 2020*
- Research on perception for autonomous driving
- Advisor: David Held

Johns Hopkins University **Baltimore, MD**
- Research Associate, Department of Computer Science *May 2016 - Sep. 2016*
- Research on medical robotics and augmented reality
- Advisors: Peter Kazanzides, Russell H. Taylor

Research Interests

My research interests lie in the general area of robotics, computer vision, and machine learning. My ultimate goal is to build machines that act, learn and think like people. In my research, I focus on making robots learn from people, and how to make robots learn through their own data.

Publications (☞Google Scholar Profile)

Preprints and in submissions

2023

Robot Parkour Learning
- Ziwen Zhuang*, Zipeng Fu*, **Jianren Wang**, Christopher Atkeson, Sören Schwertfeger, Chelsea Finn, Hang Zhao
- *Conference of Robot Learning (Best Systems Paper Finalist)* **CoRL 2023 (BSPF)**

Manipulate by Seeing: Creating Manipulation Controllers from Pre-Trained Representations
- **Jianren Wang***, Sudeep Dasari*, Mohan Kumar, Shubham Tulsiani, Abhinav Gupta

- *International Conference on Computer Vision (Oral)* **ICCV 2023 (Oral)**

2022

SEMI: Self-Supervised Exploration via Multisensory Incongruity
- **Jianren Wang**, Ziwen Zhuang, Hang Zhao
- *IEEE International Conference on Robotics and Automation* **IRCA 2022**

Molecular Contrastive Learning of Representations via Graph Neural Networks
- Yuyang Wang, **Jianren Wang**, Zhonglin Cao, Amir Barati Farimani
- *Nature Machine Intelligence*

2021

RB2: Robotics Benchmarking with a Twist
- Sudeep Dasari, **Jianren Wang**, Joyce Hong, Shikhar Bahl, Yixin Lin, Austin Wang, Abitha Thankaraj, Karanbir Chahal, Berk Calli, Saurabh Gupta, David Held, Lerrel Pinto, Deepak Pathak, Vikash Kumar, Abhinav Gupta
- *2021 Conference on Neural Information Processing Systems* **NeurIPS 2021**

Semi-supervised 3D Object Detection via Temporal Graph Neural Networks
- **Jianren Wang**, Haiming Gang, Siddharth Ancha, Yi-Ting Chen, David Held
- *2021 International Conference on 3D Vision* **3DV 2021**

Adversarial Robust Imitation Learning
- **Jianren Wang**, Ziwen Zhuang, Yuyang Wang, Hang Zhao
- *2021 Conference on Robot Learning* **CoRL 2021**

Wanderlust: Online Continual Object Detection in the Real World
- **Jianren Wang**, Xin Wang, Yue Shang-Guan, Abhinav Gupta
- *2021 International Conference on Computer Vision* **ICCV 2021**

2020

CLOUD: Contrastive Learning of Unsupervised Dynamics
- **Jianren Wang***, Yujie Lu*, Hang Zhao
- *2020 Conference on Robot Learning* **CoRL 2020**

Inverting the Forecasting Pipeline with SPF2: Sequential Pointcloud Forecasting for Sequential Pose Forecasting
- Xinshuo Weng, **Jianren Wang**, Sergey Levine, Kris M. Kitani, Nicholas Rhinehart
- *2020 Conference on Robot Learning* **CoRL 2020**

PanoNet3D: Combining Semantic and Geometric Understanding for LiDAR Point Cloud Detection
- Xia Chen, **Jianren Wang**, David Held, Martial Hebert
- *International Virtual Conference on 3D Vision 2020* **3DV2020**

GSIR: Generalizable 3D Shape Interpretation and Reconstruction
- **Jianren Wang**, Zhaoyuan Fang
- *2020 The European Conference on Computer Vision (ECCV)* **ECCV2020**

3D Multi-Object Tracking: A Baseline and New Evaluation Metrics
- Xinshuo Weng, **Jianren Wang**, David Held, Kris M. Kitani
- *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems* **IROS 2020**

Motion Prediction in Visual Object Tracking
- **Jianren Wang***, Yihui He*
- *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems* **IROS 2020**

Uncertainty-aware Self-supervised 3D Data Association
- **Jianren Wang**, Siddharth Ancha, Yi-Ting Chen, David Held
- *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems* **IROS 2020**

Deep Mixture Density Network for Object Detection under Occlusion
- Yihui He*, **Jianren Wang***
- *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems* **IROS 2020**

AlignNet: A Unifying Approach to Audio-Visual Alignment
- **Jianren Wang***, Zhaoyuan Fang*, Hang Zhao
- *In Proceedings of the 20th IEEE Winter Conference on Applications of Computer Vision* **WACV 2020**

PanoNet: Real-time Panoptic Segmentation through Position-Sensitive Feature Embedding
- Xia Chen, **Jianren Wang**, Martial Hebert

2019

Physics-Aware 3D Mesh Synthesis
- **Jianren Wang**, Yihui He
- *In Proceedings of 2019 International Conference on 3D Vision* **3DV 2019**

Depth-wise Decomposition for Accelerating Separable Convolutions in Efficient Convolutional Neural Networks
- Yihui He*, Jianing Qian*, **Jianren Wang**
- *In Proceedings of 3rd International Workshop on Compact and Efficient Feature Representation and Learning in Computer Vision* **CVPR 2019 Workshop**

Bounding Box Regression with Uncertainty for Accurate Object Detection
- Yihui He, Chenchen Zhu, **Jianren Wang**, Marios Savvides, Xiangyu Zhang
- *In Proceedings of 37th IEEE/CVF Conference on Computer Vision and Pattern Recognition* **CVPR 2019**

Ancient - 2018

Vertical Jump Height Estimation Algorithm Based on Takeoff and Landing Identification Via Foot-Worn Inertial Sensing
- **Jianren Wang**, Junkai Xu, Peter B Shull
- *2018 Journal of biomechanical engineering*

Integration of a Low-Cost Three-Axis Sensor for Robot Force Control
- Shuyang Chen, **Jianren Wang**, Peter Kazanzides
- *In Proceedings of 2018 Second IEEE International Conference on Robotic Computing*

Validation of a Smart Shoe for Estimating Foot Progression Angle during Walking Gait
- Haisheng Xia, Junkai Xu, **Jianren Wang**, Michael A Hunt, Peter B Shull
- *2017 Journal of biomechanics*

Prioritization and Static Error Compensation for Multi-camera Collaborative Tracking in Augmented Reality
- **Jianren Wang**, Long Qian, Ehsan Azimi, Peter Kazanzides
- *In Proceedings of 2017 IEEE Virtual Reality*

Honors and Awards

- **Excellent Engineer Honor Degree of B.Sc in Naval Architecture and Ocean Engineering**, Shanghai Jiao Tong University. 2017
- **Best Bachelor Theses of Shanghai Jiao Tong University** (1%). 2017
- **China National Scholarship** (0.2%). 2014, 2015, 2016
- **First Prize in China Undergraduate Mathematics Competitions**, Shanghai Division, 2014
- **First Prize in China Undergraduate Physics Competitions**, Shanghai Division, 2014

Professional Service

Review paper for:
- The Conference on Robot Learning (CoRL)
- IEEE International Conference on Robotics and Automation (ICRA)
- Conference on Computer Vision and Pattern Recognition (CVPR)
- International Conference on Computer Vision (ICCV)
- IEEE Transactions on Robotics (T-RO)
- IEEE Robotics and Automation Letters (RA-L)
- Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Learning Representations (ICLR)
- Journal of Visual Communication and Image Representation (JVIS)

Additional Experience

- **Drummer**, *Dust (Music Band)*: Invited to *Strawberry Music Festival (top)*, 2014
- **Author**, Published novel "Stones," *Author Press OL*, 2013

Skills

- **Deep Learning**: PyTorch, TensorFlow, Caffe, MXNet
- **Programming**: Python, C++, Julia, Taichi, C#, Java, Matlab
- **Mechanical**: CAD, CAM, Manufacture
- **Electronics**: Arduino, Raspberry Pi, STM32
- **Robots**: Hello-Robot, Franka, LoCobBot, UR5
- **OS**: Linux, ROS, Windows