JINKUN CAO

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Homepage: www.jinkuncao.com (not always up-to-date)

EDUCATION

Carnegie Mellon University　　　　　　　　　　　　　　　　　　　2020 -
Ph.D. in Robotics (advised by Kris Kitani)

Shanghai Jiao Tong University　　　　　　　　　　　　　　　　2016 - 2020
B.Eng in Software Engineering (advised by Cewu Lu)

PUBLICATIONS

Grasping Diverse Objects with Simulated Humanoids　　　　　　[project] [NeurIPS]
Zhengyi Luo*, **Jinkun Cao***, Sammy Christen, Alexander Winkler, Kris Kitani, Weipeng Xu　　2024

Mixed Gaussian Flow for Diverse Trajectory Prediction　　　　　[preprint] [NeurIPS]
Jiahe Chen*, **Jinkun Cao***, Kris Kitani, Jiangmiao Pang　　　　　　　　　2024

CooHOI: Learning Cooperative Human-Object Interaction with Manipulated Object Dynamics [arxiv]
[NeurIPS(Spotlight)]
Jiawei Gao, Ziqin Wang, ..., **Jinkun Cao**, Xiaolin Hu, Si Liu, Jifeng Dai, Jiangmiao Pang　　2024

Real-Time Simulated Avatar from Head-Mounted Sensors　　　　　[project] [CVPR]
Zhengyi Luo, **Jinkun Cao**, Rawal Khirodkar, Alexander Winkler, Jing Huang, Kris Kitani, Weipeng Xu 2024

Multi-Object Tracking by Hierarchical Visual Representations　　　　[arxiv] [ICRA]
Jinkun Cao, Jiangmiao Pang, Kris Kitani　　　　　　　　　　　　　2024

Harmony4D: A Video Dataset for In-The-Wild Close Human Interactions　　[NeurIPS D&B]
Rawal Khirodkar, Jyun-Ting Song, Jinkun Cao, Zhengyi Luo, Kris M. Kitani　　　2024

Universal Humanoid Motion Representations for Physics-Based Control　[project] [ICLR(Spotlight)]
Zhengyi Luo, **Jinkun Cao**, Josh Merel, Alexander Winkler, Jing Huang, Kris M. Kitani, Weipeng Xu　2024

Unified Human-Scene Interaction Via Prompted Chain-Of-Contacts　　[arxiv] [ICLR(Spotlight)]
Zeqi Xiao, Tai Wang, Jingbo Wang, **Jinkun Cao**, Wenwei Zhang, Bo Dai, Dahua Lin, Jiangmiao Pang 2024

Perpetual Humanoid Control for Real-time Simulated Avatars　　　　[arxiv] [ICCV]
Zhengyi Luo, **Jinkun Cao**, Alexander Winkler, Kris Kitani, Weipeng Xu　　　　2023

Deep OC-SORT: Multi-Pedestrian Tracking by Adaptive Re-Identification　　[arxiv] [ICIP]
Gerard Maggiolino*, Adnan Ahmad*, **Jinkun Cao**, Kris Kitani　　　　　　2023

Observation-Centric SORT: Rethinking SORT for Robust Multi-Object Tracking　[arxiv] [CVPR]
Jinkun Cao, Jiangmiao Pang, Xinshuo Weng, Rawal Khirodkar, Kris M. Kitani　　2023

MV-JAR: Masked Voxel Jigsaw and Reconstruction for LiDAR-Based Self-Supervised
Pre-Training　　　　　　　　　　　　　　　　　　　　　　[arxiv] [CVPR]
Runsen Xu, Tai Wang, Wenwei Zhang, Runjian Chen, **Jinkun Cao**, Jiangmiao Pang, Dahua Lin　　2023

Track Targets with Dense Spatio-Temporal Position Encoding　　　[arxiv] [BMVC(Oral)]
Jinkun Cao, Hao Wu, Kris Kitani　　　　　　　　　　　　　　　　2022

An Empirical Study of Disentanglement for Contrastive Learning without Negatives　[NeurIPS]
Jinkun Cao, Ruiqian Nai, Qing Yang, Jialei Huang, Yang Gao　　　　　[arxiv] 2022

DanceTrack: Multi-Object Tracking in Uniform Appearance and Diverse Motion　[paper] [CVPR]
Jinkun Cao*, Peize Sun*, Yi Jiang, Zehuan Yuan, Song Bai, Kris Kitani, Ping Luo　　2022

Instance-Aware Predictive Navigation in Multi-Agent Environments　　[paper] [ICRA]
Jinkun Cao, Xin Wang, Trevor Darrell, Fisher Yu　　　　　　　　　　2021

Attribute Restoration Framework for Anomaly Detection　　　　　[paper] [IEEE T-MM]
Chaoqing Huang*, Fei Ye*, **Jinkun Cao**, Maosen Li, Ya Zhang, and Cewu Lu　　2020

Cross-Domain Adaptation for Animal Pose Estimation　　　　　　[paper] [ICCV(Oral)]
Jinkun Cao, Hongyang Tang, Hao-Shu Fang, Xiaoyong Shen, Cewu Lu, Yu-Wing Tai　　2019

Pairwise Body-Part Attention for Recognizing Human-Object Interactions　　[paper] [ECCV]

Hao-Shu Fang, **Jinkun Cao**, Yu-Wing Tai, Cewu Lu 2018

IN SUBMISSION Multi-Modal Hand-Object Interaction Generation
Jinkun Cao, Jingyuan Liu, Kris Kitani, Yi Zhou

TransTrack: Multiple-Object Tracking with Transformer [preprint]
Peize Sun, **Jinkun Cao**, Yi Jiang, Rufeng Zhang, Enze Xie, Zehuan Yuan, Ping Luo

OPEN-SOURCE PROJECTS - **OC-SORT**: A Kalman filter-based object tracking algorithm open-sourced on Github. It has been adopted in many open-sourced object tracking projects.

- **AlphaPose**: I was a main contributor of the original Lua version of the human pose estimation algorithm RMPE in COCO-Keypoint-Detection Challenge, which was later refactored and rewritten in Pytorch to be AlphaPose, a popular pose estimation codebase with 6.5k stars on Github.

- **Open mmtracking**: I am a main contributor of OpenLab mmtracking, a popular multi-object tracking codebase with more than 2k stars on Github.

RESEARCH EXPERIENCE **Nvidia Research**, *Research Scientist Intern*   2024.5 - 2024.12
with Ye Yuan, Umar Iqbal, Haotian Zhang, Yuke Zhu and Jim Fan

Adobe Research, *Research Scientist Intern*   2023.5 - 2024.3
with Yi Zhou on *hand-object interaction generation*

Meta Reality Labs, *Research Scientist Intern*   2022.5 - 2022.12
with Zhe Cao, Shih-En Wei and Weipeng Xu on *video human pose estimation*

Tsinghua Univeristy & Shanghai Qi-Zhi Institute, *Visiting Scholar*   2020.3 - 2021.4
with Yang Gao on *unsupervised representation learning*

Bytedance AI Lab, *Research Intern*   2020.5 - 2020.8
with Yuning Jiang and Hao Wu on *video analysis and understanding*

Berkeley Artificial Intelligence Research, *Visiting Student*   2019.7 - 2019.12
with Trevor Darrell and Fisher Yu on *multi-agent forecasting and planning*

Tencent YouTu X-Lab, *Research Intern*   2018.7 - 2018.9
with Xiaoyong Shen and Yu-Wing Tai on *domain adaptation*

Machine Vision and Intelligence Group, SJTU, *Research Assistant*   2016.9 - 2020.6
with Cewu Lu on *pose estimation and action recognition*

SCHOLARSHIP & AWARD & GRANTS

ICRA Travel Award,	2024
Meta Research PhD Fellowship,	2023
ICLR Travel Award (Financial Assistance),	2023
NeurIPS Top Reviewer,	2022
NeurIPS Travel Award,	2022
CMU Graduate Travel Grants,	2022
CVPR 2022 Workshop Travel Grants,	2022
CMU Graduate Fellowship,	2020
Yuan-Qing Yang Foundation Scholarship,	2020
MengJiaChenYue Scholarship,	2019
Oversea Visiting Funding Scholarship,	2019
National Scholarship,	2019
A-Class Academic Excellence Scholarship,	2018
B-Class Academic Excellence Scholarship,	2017, 2019
SJTU Merit Student,	2017, 2018
National Scholarship for Encouragement,	2017, 2018
SJTU-Wish Scholarship,	2017
SJTU-Adrian Scholarship,	2016

US PATENTS **Perpetual Humanoid Control for Real-time Simulated Avatars** [in process]
Zhengyi Luo, **Jinkun Cao**, Alexander Winkler, Kris Kitani, Weipeng Xu

* = equal contribution

ACADEMIC SERVICES

Conference Reviewer
Computer Vision: ICCV (21, 23), ECCV (20, 22, 24), CVPR (22, 23, 24), WACV (24), 3DV (25)
Robotics: ICRA (22, 23), IROS (22)
Machine Learning: NeurIPS (22, 23, 24), AAAI (22, 23, 24), ICML (23,24), ICLR (24,25)
Graphics and VR: Siggraph Asia (24), ISMAR (23)

Journal Reviewer
RA-L, TMM, TNNLS, TCSVT, IJCV, TMLR

Conference Volunteer
ICLR 2023, Hybrid (Virtual and Kigali, Rwanda)

Workshop Organizer
ECCV'2022: "Multiple Object Tracking in Complex Environments Workshop" [link]

SCHOOL SERVICES

Teaching Assistant
16720 Computer Vision, 2022 Spring
16824 Visual Learning Recognition, 2022 Fall

Student Member on Thesis Committee of
Muyang Li (w/ Song Han, Jun-Yan Zhu, Tianqi Chen)
Zhengyi Luo (w/ Kris Kitani, David Held, Fernando de la Torre)
Rohan Choudhury (w/ Katerina Fragkiadaki, Laszlo Jeni, Kris Kitani)

Admission Committee
Master of Robotics, 2021
Master of Computer Vision, 2021, 2024

TALKS

Gesture Lecture about human pose and motion   05-899D: Interactive Extended Reality 2023

RESEARCH MENTORSHIP

Jyun-Ting Song	MSR @ CMU	2023
Hyukjae Kwark	MSCS @ CMU → Engineer @ Zensors	2023
Zeqi Xiao	PhD @ NTU	2023
Jiahe Chen	Undergrad @ ZJU → PhD @ Shanghai Jiao-Tong Univ	2023
Gerard Maggiolino	MSCV @ CMU → Engineer @ Tesla	2022 - 2023
Adnan Ahmad	MSCV @ CMU → Engineer @ Meta	2022 - 2023
Runsen Xu	PhD @ CUHK	2022 - 2023
Yunhao Fang	Undergrad @ ZJU → MSCS @ UCSD	2022