Kaichun Mo

Mailing Address
737 Campus Dr, Apt 803A
Stanford, CA 94305

Email: kaichun@cs.stanford.edu
Tel: (+1) 650-521-6801
Homepage: *http://cs.stanford.edu/∼kaichun/*

RESEARCH INTERESTS

3D Computer Vision and Graphics, Robotics, 3D Deep Learning and Reinforcement Learning.

EDUCATION

Stanford University, USA Sept 2016 – Present
Ph.D. Candidate, Computer Science
- **Advisor:** Prof. Leonidas Guibas;
- **Lab:** Stanford Geometry Lab and Stanford Artificial Intelligence Lab;
- **Research Focus:** Object-centric 3D deep learning for perception, reasoning and interaction.

Shanghai Jiao Tong University, China Sept 2012 – July 2016
B.S.E., Computer Science, ACM Honored Class, Zhiyuan College
- ACM Honored Class is a highly selective class (top 33 students) in SJTU.
- GPA: 3.96/4.30 (91.87/100) Rank: **1/33**

PUBLICATIONS

Yichen Li*, **Kaichun Mo***, Lin Shao, Minhyuk Sung and Leonidas J. Guibas, *Learning 3D Part Assembly from a Single Image*, ECCV 2020.

Kaichun Mo, He Wang, Xinchen Yan and Leonidas J. Guibas, *PT2PC: Learning to Generate 3D Point Cloud Shapes from Part Tree Conditions*, ECCV 2020.

Kaichun Mo*, Paul Guerrero*, Li Yi, Hao Su, Peter Wonka, Niloy Mitra and Leonidas J. Guibas, *StructEdit: Learning Structural Shape Variations*, CVPR 2020.

Fanbo Xiang, Yuzhe Qin, **Kaichun Mo**, Yikuan Xia, Hao Zhu, Fanchen Liu, Minghua Liu, Hanxiao Jiang, Yifu Yuan, He Wang, Li Yi, Angel Chang, Leonidas Guibas and Hao Su, *SAPIEN: A SimulAted Part-based Interactive ENvironment*, CVPR 2020 (Oral).

Tiange Luo, **Kaichun Mo**, Zhiao Huang, Jiarui Xu, Siyu Hu, Liwei Wang, Hao Su, *Learning to Group: A Bottom-Up Framework for 3D Part Discovery in Unseen Categories*, ICLR 2020.

Kaichun Mo*, Paul Guerrero*, Li Yi, Hao Su, Peter Wonka, Niloy Mitra and Leonidas J. Guibas, *StructureNet: Hierarchical Graph Networks for 3D Shape Generation*, ACM Transactions on Graphics (SIGGRAPH Asia 2019).

Kaichun Mo, Shilin Zhu, Angel X.Chang, Li Yi, Subarna Tripathi, Leonidas J. Guibas and Hao Su, *PartNet: A Large-scale Benchmark for Fine-grained and Hierarchical Part-level 3D Object Understanding*, CVPR 2019. (**featured in:** IEEE Spectrum, The Robot Report, etc.)

Charles R. Qi, Hao Su, **Kaichun Mo**, and Leonidas J. Guibas, *PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation*, CVPR 2017 (Oral). (**1253 Citations and 2191 Github Stars**)

Yujun Li, **Kaichun Mo** and Haishan Ye, *Accelerating Random Kaczmarz Algorithm Based on Clustering Information*, AAAI 2016.

MANUSCRIPTS

He Wang*, Zetian Jiang*, Li Yi, **Kaichun Mo**, Hao Su and Leonidas J. Guibas, *Rethinking Sampling in 3D Point Cloud Generative Adversarial Networks*, arXiv:2006.07029 [cs.CV].

Jialei Huang*, Guanqi Zhan*, Qingnan Fan, **Kaichun Mo**, Lin Shao, Baoquan Chen, Leonidas J. Guibas and Hao Dong, *Generative 3D Part Assembly via Dynamic Graph Learning*, arXiv:2006.07793 [cs.CV].

Kaichun Mo, Haoxiang Li, Zhe Lin and Joon-Young Lee, *The AdobeIndoorNav Dataset: Towards Deep Reinforcement Learning based Real-world Indoor Robot Visual Navigation*, arXiv:1802.08824 [cs.RO].

Luo Luo, **Kaichun Mo**, Zhihua Zhang, *Blockwise Matrix Completion for Image Colorization*, technical report, 2015.

RESEARCH EXPERIENCE

Research Intern June 2020 – Sep 2020
Facebook AI Research, Facebook Inc., USA
- Mentors: Shubham Tulsiani, Mustafa Mukadam and Prof. Abhinav Gupta.
- Object-centric segmentation, affordance and actionable information for robotic manipulation.

Visiting Graduate July 2019 – Sep 2019
Su Lab, University of California, San Diego (UCSD), USA
- Advisor: Prof. Hao Su;
- 3D weakly-supervised learning for shape part and structure discovery;
- Object-centric physical simulation for 3D robotic vision, control and planning.

Research Intern June 2018 – Sep 2018
Machine Intelligence group, Autodesk Research, Autodesk Inc., USA
- Mentor: Mike Haley;
- Unsupervised shape structure induction from a collection of 3D shapes.

Research Intern June 2017 – Sep 2017
Imagination Lab, Adobe Research, Adobe System Inc., USA
- Mentors: Haoxiang Li, Joon-Young Lee, Zhe Lin and Ersin Yumer;
- Autonomous robot indoor navigation using Reinforcement Learning.

Rotation Student April 2017 – June 2017
Computer Graphics Lab, Stanford University, USA
- Advisor: Prof. Doug James;
- Sound synthesis using 3D CAD ShapeNet models.

Rotation Student Jan 2017 – April, 2017
Computational Vision and Geometry Lab, Stanford University, USA
- Advisor: Prof. Silvio Savarese;
- Multi-agent collaboration and theory of mind using Reinforcement Learning.

Exchange Research Scholar July 2015 – Dec 2015
Graphics and Vision Lab, Cornell University, USA
- Advisor: Prof. Kavita Bala;
- Algorithmic propagation of material properties from 2D images to 3D ShapeNet models.

Research Assistant June 2014 – June 2016
Brain-like Computing and Machine Intelligence Lab, Shanghai Jiao Tong University, China

- Advisor: Prof. Zhihua Zhang;
- Accelerating random kaczmarz algorithm via clustering;
- Improving Block-RPCA algorithm performance on image impainting.

TEACHING EXPERIENCE

Course Assistant of Geometric and Topological Data Analysis (CS233) Spring 2020
Stanford University, USA

- Grading, teaching, hosting office hours.

Guest Lecturer of Geometric and Topological Data Analysis (CS233) Spring 2018
Stanford University, USA

- Give a lecture on 3D deep learning, volumetric CNNs and multi-view CNNs.

Teaching Assistant of Introduction To Computer Science (CS120) Fall 2014
Shanghai Jiao Tong University, China

- Give lectures on introduction to set theory and combinatorics.

PROFESSIONAL SERVICES

- **Conference Reviewer:** NeurIPS 2020; ECCV 2020; CVPR 2020; ICRA 2020; ICCV 2019; Siggraph Asia 2020; AAAI 2020; ACCV 2020; 3DV 2017, 2018, 2019, 2020; WACV 2020, 2021; MVA 2019;
- **Workshop Reviewer:** CICV (Compositionality in Computer Vision) 2020, 3DRW (3D Reconstruction in the Wild) 2018, 2019; VLEASE (Visual Learning and Embodied Agents in Simulation Environments) 2018
- **Journal Reviewer**: Robotics and Automation Letters (RA-L); Transactions on Pattern Analysis and Machine Intelligence (TPAMI); IEEE Transactions on Image Processing (TIP); IEEE Transactions on Multimedia; IEEE Transactions on Robotics; Signal Processing: Image Communication; Computers and Graphics; Transactions on Visualization and Computer Graphics; Information Fusion; International Journal of Advanced Robotic Systems.

MEDIA COVERAGE

- **IEEE Spectrum:** *Massive 3D dataset helps robots understand what things are*;
- **The Robot Report:** *Intel, OSU, Stanford, and UC San Diego work on reinforcement learning, PartNet could help household robots*;
- **Robotics Business Review:** *Researchers Launch 26K+ Object Dataset to Help Robots Learn Shapes*;
- **TechCrunch:** *Intel is doing the hard work necessary to make sure robots can operate your microwave*;
- **Intel AI Blog:** Introducing PartNet: the first large-scale dataset with fine-grained, hierarchical, instance-level part annotations.

HONORS AND AWARDS

- **School of Engineering Fellowship**, Stanford, 2016-2017
- **Meritorious Winner**, 2015 Mathematical Contest In Modeling, 2015 (top 10% of all participants)
- **National Scholarship**, 2015 (highest honor for undergraduates in China, awarded to top 1% students)
- **National Scholarship**, 2014 (highest honor for undergraduates in China, awarded to top 1% students)
- **KoGuan Scholarship**, 2013 (awarded to top 12 students in Zhiyuan College)
- **The First Prize**, National High School Mathematics Contest, China, 2011
- **The First Prize**, National Olympiad in Informatics in Provinces, China, 2010

SKILLS

- **Programming Languages:** C, C++, Java, Python, Matlab, Javascript.
- **Softwares and Platforms:** Caffe, TensorFlow, PyTorch, ROS, MYSQL, NodeJS.
- **Language:** Chinese (Native), English (Proficient: TOEFL 107, Speaking 22; GRE Verbal 162).