Chiyu Max Jiang

CONTACT 1600 Amphitheatre Parkway, Mountain View, CA maxjiang93@gmail.com
Homepage: http://maxjiang.ml

INTERESTS **Computer Vision**: Computer Vision; Object Detection and Segmentation;
3D Deep Learning: 3D Machine Learning for Graphics and Physics;
Self-driving Cars: Algorithms for self-driving cars, perception and beyond.

EDUCATION **University of California, Berkeley** | Berkeley, CA, USA
Ph.D. in Mechanical Engineering ('20)
3D Deep Learning & Physics Informed Machine Learning
Advisors: Philip Marcus, Matthias Niessner;

Cornell University | Ithaca, NY, USA
B.S. in Bio Engineering ('15)
Magna Cum Laude (GPA: 3.95)

Zhejiang University | Hangzhou, China
B.Eng. in Bio Engineering ('15)

EXPERIENCE **Waymo** (formerly Google's self-driving project) | Mountain View, CA
Research Scientist Jan 2021 - Present
- Applied research in 3D perception and beyond.

Cruise | San Francisco, CA
Senior Applied Research Scientist Jun 2020 - Jan 2021
- Led the deployment of the current LiDAR based object detection system on the car, coordinating various cross-team collaborations for runtime optimizations.
- Improved the functional and runtime performance of the model, resulting in 138x improvement in point data processing speed.

Google | Mountain View, CA
Research Intern May 2019 - Mar 2020
- Ph.D. student researcher at Google Research (Perception).
- Developed novel learning based implicit 3D geometry representation for large-scale scene reconstruction from point clouds (Local Implicit Grid - CVPR 2020).
- Collaborated on a project for generating enhanced texture for scanned 3D models (Adversarial Texture Optimization - CVPR 2020).
- Proficient with Google internal infrastructure and TensorFlow for ML development, and Apache Beam for massive data processing and ML inference workflows.
- Initiated and coordinated internal and external collaborations with research partners.

Lawrence Berkeley National Lab | Berkeley, CA
Graduate Student Researcher Jun 2018 - May 2020
- Research in physics-informed machine learning for spatial-temporal super-resolution (MeshfreeFlowNet - SC 20).
- Research on Spherical CNNs on Unstructured Grids and applications towards computer vision and climate science (Unstructured Grid Spherical CNN - ICLR 2019).

SKILLS
- **Machine Learning** Tensorflow, PyTorch, Scikit-Learn;
- **Programming** Python, C/C++ (CUDA/OpenMP/MPI), Bash, Matlab;
- **Tools** Docker, Git, LaTeX, Apache Beam / Flume

PROFESSIONAL SERVICE Reviewer: ICCV, AAAI, CVPR, ECCV, NeurIPS, ICLR, SIGGRAPH.

Awards

2020	Best Student Paper Award (Finalist), SC20
2018	Chang-Lin Tien Graduate Fellowship, UC Berkeley
2017	The Frank and Margaret Lucas Scholarship, UC Berkeley
2017	Graduate Division Block Grant Award, UC Berkeley
2015-16	The Jonathan Laitone Memorial Scholarship, UC Berkeley
2013-15	Dean's List, CALS, Cornell University
2011-13	Scholarship for Academic Excellence, Zhejiang University
2011-13	Merit Student, Zhejiang University

Publication

*

[1] S. Peng, **C. Jiang**, Y. Liao, M. Niemeyer, M. Pollefeys, and A. Geiger, "Shape As Points: A Differentiable Poisson Solver," in *Advances in Neural Information Processing Systems (NeurIPS, Oral)*, 2021.

[2] K. Kashinath, M. Mustafa, A. Albert, J. Wu, **C. Jiang**, S. Esmaeilzadeh, K. Azizzadenesheli, R. Wang, A. Chattopadhyay, A. Singh, and others, "Physics-informed machine learning: case studies for weather and climate modelling," *Philosophical Transactions of the Royal Society A*, vol. 379, no. 2194, p. 20200093, 2021.

[3] **C. Jiang***, J. Huang*, A. Tagliasacchi, and L. Guibas, "ShapeFlow: Learnable Deformations Among 3D Shapes," in *Advances in Neural Information Processing Systems (NeurIPS, Spotlight)*, 2020.

[4] **C. Jiang***, S. Esmaeilzadeh*, K. Azizzadenesheli, K. Kashinath, M. Mustafa, H. Tchelepi, P. Marcus, Prabhat, and A. Anandkumar, "MeshfreeFlowNet: A Physics-Constrained Deep Continuous Space-Time Super-Resolution Framework," in *International Conference for High Performance Computing, Networking, Storage and Analysis (SC, Best Student Paper Finalist)*, 2020.

[5] **C. Jiang**, A. Sud, A. Makadia, J. Huang, M. Nießner, and T. Funkhouser, "Learning Local Implicit Grid Representation for 3D Scenes," in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.

[6] **C. Jiang**, K. Kashinath, Prabhat, and P. Marcus, "Enforcing physical constraints in CNNs through differentiable PDE layer," in *ICLR 2020 Workshop on Integration of Deep Neural Models and Differential Equations*, 2020.

[7] J. Huang, J. Thies, A. Dai, A. Kundu, **C. Jiang**, L. Guibas, M. Niessner, and T. Funkhouser, "Adversarial Texture Optimization from RGB-D Scans," in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.

[8] **C. Jiang**, D. L. O. Lansigan*, P. Marcus, and M. Nießner, "DDSL: Deep Differentiable Simplex Layer for Learning Geometric Signals," in *IEEE International Conference on Computer Vision (ICCV)*, 2019.

[9] **C. Jiang**, J. Huang, K. Kashinath, Prabhat, P. Marcus, and M. Niessner, "Spherical CNNs on Unstructured Grids," in *International Conference on Learning Representations (ICLR)*, 2019.

[10] **C. Jiang**, D. Wang, J. Huang, P. Marcus, and M. Niessner, "Convolutional Neural Networks on Non-uniform Geometrical Signals Using Euclidean Spectral Transformation," in *International Conference on Learning Representations (ICLR)*, 2019.

[11] B. Nadiga, **C. Jiang**, and D. Livescu, "Leveraging bayesian analysis to improve accuracy of approximate models," *Journal of Computational Physics*, vol. 394, pp. 280 – 297, 2019.

[12] S. Oh, C.-H. Jiang, **C. Jiang**, and P. S. Marcus, "Finding the optimal shape of the leading-and-trailing car of a high-speed train using design-by-morphing," *Computational Mechanics*, Oct 2017.

Invited Talks

NVIDIA	06/2020	MeshfreeFlowNet: A Physics-Constrained Deep Continuous Space-Time Super-Resolution Framework
Stanford	05/2020	Mesh ODE: A Robust and Scalable Framework for Mesh Deformation
Caltech	06/2020	MeshfreeFlowNet: A Physics-Constrained Deep Continuous Space-Time Super-Resolution Framework
Berkeley	09/2019	Deep Learning Methodologies and Tools for Scientific Problems
Berkeley	04/2019	Spherical CNNs on Unstructured Grids
Google	03/2019	Deep Learning of simplicial mesh-based geometric signals
LANL	03/2018	3D Deep Learning for Shapes and its Applications in Engineering
LBNL	02/2018	Physics Informed Machine Learning
PIML 2018	01/2018	A Deep Learning Framework for Constrained Shape Optimization.