Chiyu Max Jiang

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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
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[1] 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.

[2] 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.

[3] 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.

[4] 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.

[5] 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.

[6] 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.

[7] 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.

[8] 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.

[9] 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.

[10] 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.

[11] 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.