

HAOLIANG JIANG

◇ Google Scholar ◇ Homepage

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EDUCATION

Georgia Institute of Technology
Master of Science in Computer Science
GPA: **3.90/4.0**

Atlanta, U.S.
Aug.2019-May.2021(expected)

Carnegie Mellon University
Master of Science in Mechanical Engineering
GPA: **3.96/4.0**

Pittsburgh, U.S.
Sept.2017-May.2019

Tongji University
Bachelor of Engineering in Vehicle Engineering
GPA:**91.76/100**, Graduated with Honor (5%)

Shanghai, China
Sept.2014-July.2017

University of Illinois, Urbana Champaign
Exchange Program for Excellent Senior Undergraduates
Sponsored by China Scholarship Council

Urbana and Champaign, U.S.
Jan.-May 2017

RESEARCH EXPERIENCES

Sim2Real Detection of Point Clouds

Feb.-July 2020

Graduate Research Project

Advisor: Prof. Zsolt Kira | Robotic Perception and Learning Lab | **Georgia Tech**

Responsibilities:

- Implemented a DBSCAN and PointNet combined pipeline to generate psuedo 3D bbox labels for domain adaptation from PreSIL to KITTI
- Improved the unsupervised performance of Pointpillars on KITTI by adding RevGrad to pseudo images and feature maps
- Built useful tools for visualizing, analyzing and evaluating point cloud street scene data

Physics-based AI for Mechanics and Topology Optimization

Jun.2018-July 2020

Graduate Research Project

Advisor: Prof. Levent Burak Kara | Visual Design and Engineering Lab | **CMU**

Responsibilities:

- Implemented a cGAN-based model as a baseline model for topology optimization with intermediate physical domains
- Developed a cGAN-based deep learning algorithm to enhance the performance on various high-resolution shapes and configurations
- Developed a ResNet-based deep learning algorithm to analyze stress fields of basic engineering structures

Data-driven Upsampling of Point Clouds

Mar.-July 2018

Graduate Research Project

Advisor: Prof. Levent Burak Kara | Visual Design and Engineering Lab | **CMU**

Responsibilities:

- Conducted single-category, multi-category and other experiments to evaluate the upsampling capability and complete the algorithm
- Came up with the idea of combination of critical points and uniform points to improve the upsampling capability of the algorithm
- Preprocess point clouds data in ShapeNet

Functionally-Based Design through Data-Driven Shape Analysis

Sep.2017-Mar.2018

Graduate Research Project

Advisor: Prof. Levent Burak Kara | Visual Design and Engineering Lab | **CMU**

Responsibilities:

- Developed a program via OpenGL for visualization, selection and deletion of meshes on CAD models
- Preprocessed and analyzed complex engineered products using commercial CAD software and MATLAB to generate novel design models via genetic algorithm
- Tapped into a deep learning generative model, genetic algorithm and simulators to develop a data-driven design support for 3D voxelized shapes

Research on Autoignition Characteristics of Jet Fuels, Biodiesels and PRFs

Jul.-Oct.2016

Visiting Undergraduate Research Intern

Advisor: Prof. Jyh-Yuan Chen | Combustion Modeling Lab | **U.C.Berkeley**

PUBLICATIONS

- [1]**Jiang, H.**, Nie, Z., Yeo, R., Farimani, A. B., and Kara, L. B. StressGAN: a generative deep learning model for 2d stress distribution prediction. ASME. Journal of Applied Mechanics May 2021; 88(5): 051005. (Impact Factor: 2.671)
- [2]Nie, Z., Lin, T., **Jiang, H.**, and Kara, L. B. TopologyGAN: topology optimization using generative adversarial networks based on physical fields over the initial domain. ASME. Journal of Mechanical Design March 2021; 143(3): 031715. (Impact Factor: 2.652)
- [3]Nie, Z., **Jiang, H.**, and Kara, L. B. Stress Field prediction in cantilevered structures using convolutional neural networks. Journal of Computing and Information Science in Engineering 20, 1 (09 2019). (Impact Factor: 1.431)
- [4]Zhang, W., **Jiang, H.**, Yang, Z., Yamakawa, S., Shimada, K., and Kara, L. B. Data-driven upsampling of point clouds. Comput. Aided Des.112(2019), 1–13. (5-Year Impact Factor: 3.541)
- [5]Zhang, W., Yang, Z., **Jiang, H.**, Nigam, S., Yamakawa, S., Furuhashi, T., Shimada, K., and Kara, L. B. 3d shape synthesis for conceptual design and optimization using variational autoencoders. InProceedings of International Design Engineering Technical Conferences and Computers and Information in Engineering Conference(2019), vol. 2A.
- [6]Yang, Z., **Jiang, H.**, and Zou, L. 3d conceptual design using deep learning.arXiv preprint arXiv:1808.01675(2018).

COURSE PROJECTS

- Recon Blind Multi-Chess** *Nov.-Dec. 2020*
Course Project of Robot Intelligence: Planning
 - Implemented a reinforcement learning based MCTS algorithm to play recon blind multi-chess.
- Denoised Indoor Navigation of Habitat 2020** *Feb.-May 2020*
Course Project of Deep Learning
 - Explored applying high-level visual representations and ORB-SLAM2 as a visual odometry to SOTA to improve its performance in Habitat Challenge 2020
- Deep Reinforcement Learning with Imitation** *Oct.-Nov. 2020*
Course Project of Interactive Robotic Learning
 - Implemented a GAIL algorithm with imitation learning to play an Atari game in an OpenAI gym environment
- Structure-Guided Single View 3D Reconstruction** *Feb.-May 2019*
Course Project of Visual Learning and Recognition
 - Applied a structure-guided pipeline to improve the performance of SOTA on single-view 3D reconstruction
- 3D Conceptual Design Using Deep Learning** *Mar.-May 2018*
Course Project of Intro to Deep Learning
 - Explored a deep learning algorithm for conceptual design with the combination of geometrical features from various objects

TEACHING EXPERIENCES

- Teaching Assistant of Advanced Engineering Computation** *Jan -May 2019*
Carnegie Mellon University
- Teaching Assistant of Linear Control System** *Sep -Dec. 2018*
Carnegie Mellon University

AWARDS & CERTIFICATES

- First Prize, FSAE China Union *2016*
- The Harting Scholarship of Excellence (5%) *2016*
- National Scholarship (1%) *2015*
- Scholarship of Excellence (10%) *2014*

TECHNICAL SKILLS

Programming Languages Python, Pytorch, Tensorflow, MATLAB, C++, MySQL, Java, L^AT_EX