HAOLIANG JIANG

Mobile: (412)478-1198 ⋄ Email: hjiang321@gatech.edu

Google Scholar: https://scholar.google.com/citations?user=-1M9z-EAAAAJhl=en

EDUCATION

Georgia Institute of Technology *Atlanta, U.S.*
Master of Science in Computer Science *Aug.2019-May.2021(expected)*
GPA: **3.90/4.0**

Carnegie Mellon University *Pittsburgh, U.S.*
Master of Science in Mechanical Engineering *Sept.2017-May.2019*
GPA: **3.96/4.0**

Tongji University *Shanghai, China*
Bachelor of Engineering in Vehicle Engineering *Sept.2014-July.2017*
GPA:**91.76/100**

University of Illinois, Urbana Champaign *Urbana and Champaign, U.S.*
Exchange Program for Excellent Senior Undergraduates *Jan.–May 2017*
Sponsored by China Scholarship Council

RESEARCH EXPERIENCE

Sim2Real Detection of Point Clouds *Feb.-July 2020*
Special Problems
Advisor: Prof. Zsolt Kira | Robotic Perception and Learning Lab | **GaTech**
Responsibilities:
- Implemented a DBSCAN and PointNet combined pipeline to generate psuedo 3D bboxes 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 scene point clouds data

Topology Optimization Using Deep Learning Algorithms *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 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. InProceedings of International Design Engineering Technical Conferences and Computers and Information in Engineering Conference(08 2020),vol. 11B. (To appear in JAM 2021)

[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. InProceedings of International DesignEngineering Technical Conferences and Computers and Information in Engineering Conference(08 2020), vol. 11A. (To appear in JMD 2021)

[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).

[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]Zhang, W., Yang, Z., **Jiang, H.**, Nigam, S., Yamakawa, S., Furuhata, 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). (A Course project in 11785 Deep Learning at CMU)

PROJECT EXPERIENCES

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

Visual Relationship Detection   *Sep -Dec. 2018*
Course Project of Multi-model Machine Learning
- Added a language model and general scenes of objects to SOTA to improve its performance on VRD and VG dataset

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

Outstanding Graduates of Shanghai (5%)	*2017*
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, LaTeX