HAOLIANG JIANG

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EDUCATION

Carnegie Mellon University *Pittsburgh, U.S.*
Master of Science in Mechanical Engineering *Sept.2017-May.2019(expected)*
GPA: **3.97/4.0** | TOEFL: **106(S25)** | GRE: **326+3.5**

Tongji University *Shanghai, China*
Bachelor of Engineering in Vehicle Engineering *Sept.2014-July.2017*
GPA:**91.76/100** | Major Rank:**3/67**

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

University of California, Los Angeles *Los Angeles, U.S.*
Summer Session *Aug.–July 2015*

RESEARCH EXPERIENCE

Finite Element Analysis(FEA) Using a Deep Learning Algorithm *Jun.2018-Present*
Graduate Research Project
Advisor: Prof. Kara | Visual Design and Engineering Lab | **CMU**
Responsibilities:
- Developed a CNN-based deep learning algorithm to analyze stress fields of basic engineering structures
- Implemented and improved a conditional GAN for high-resolution stress field prediction and other mechanics analysis problems

Data-driven Upsampling of Point Clouds *Mar.-July 2018*
Graduate Research Project
Advisor: Prof. 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
- Prepared point clouds data for the entire series of experiments

Functionally-Based Design Through Data-Driven Shape Analysis *Sep.2017-Mar.2018*
Graduate Research Project
Advisor: Prof. Kara | Visual Design and Engineering Lab | **CMU**
Responsibilities:
- Developed a program via OpenGL to implement 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**
Responsibilities:
- Tapped into CHEMKIN packages to validate the simulation results of chemical mechanisms of biodiesels with the experimental data of ignition delay
- Computed and analyzed the numerical characteristics of biodiesels and reference fuels to see the connection between the characteristics of chemical ignition delay and cetane numbers or octane numbers under IQT or HCCI condition
- Accomplished a comprehensive literature review to show the current progress of jet fuels' chemical kinetic models and the surrogates

PUBLICATIONS

[1]Wentai Zhang, Zhangsihao Yang, **Haoliang Jiang**, Suyash Nigam, Soji Yamakawa, Tomotake Furuhata, Kenji Shimada and Levent Burak Kara, **"3D Shape Synthesis for Conceptual Design and Optimization using Variational Autoencoders"**, submitted to *International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, 2019.

[2]Zhenguo Nie, **Haoliang Jiang**, Levent Burak Kara, **"Stress Field Prediction in Cantilevered Structures using Convolutional Neural Networks"**, submitted to *International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, 2019.

[3]Wentai Zhang, **Haoliang Jiang**, Zhangsihao Yang, Soji Yamakawa, Kenji Shimada and Levent Burak Kara, **"Data-driven Upsampling of Point Clouds"**, accepted by *Computer-Aided Design-Special Issues*, 2018.

CONFRENCE

"Functionally-based Conceptual Design through Data-driven Shape Analysis", attended Poster Session of Machine Learning of Science and Engineering, 2018.

TEACHING EXPERIENCE

Teaching Assistant of Advanced Engineering Computation *Jan.2019-present*
Mechanical Engineering | Carnegie Mellon University

Teaching Assistant of Linear Control System *Aug.-Dec.2018*
Mechanical Engineering | Carnegie Mellon University

PROJECT EXPERIENCES

Structure-Awared Image to Voxel 3D Reconstruction *Feb.2019-Present*
Course Project of Visual Learning and Recognition
- Developed a structure-aware 3D reconstruction algorithm based on shape abstraction

Visual Relationship Detection *Sep.-Dec.2018*
Course Project of Multi-model Machine Learning
- Implemented and improved a baseline model of visual relationship detection on VRD and VG dataset

3D Conceptual Design Using Deep Learning *Mar.-May.2018*
Course Project of Deep Learning
- Explored a learning algorithm to learn the combination of geometrical features from various objects

Graphical and Interactive Software Package Development *Nov.-Dec.2017*
Course Project of Engineering Computation
- Developed an entertaining game package via OpenGL

Resolver-to-digital interface IC *Mar.-Jun.2017*
Undergraduate Project
- Designed and completed a PCB of resolver-to-digital interface IC of PAG411-Q1 and MSP430 microcontroller to measure the revolving speed of a motor

AWARDS & CERTIFICATES

Best Student Poster at Mech.E. Graduate Research Symposium	*2018*
Outstanding Graduates of Shanghai	*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, Tensorflow, Pytorch, C++, MATLAB, MySQL, LabVIEW
Software	LaTeX, Altium Designer, Solidworks, CATIA, ANSA
Experimental	Engine bench test, Vehicle dynamics test