

Xiangzhuo Ding

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EDUCATION

Columbia University, New York, NY Sept. 2018 ~ Present
Anticipated Graduation: Dec. 2019
Master of Science in Mechanical Engineering, GPA: 3.96

Hunan University, Changsha, CN. Sept. 2014 ~ Jun. 2018
Bachelor of Engineering in Engineering Mechanics, GPA: 3.5

WORK EXPERIENCE

Robotics Algorithm Engineer Intern, RVBUST Inc. Jun. 2019 ~ Aug. 2019

- Developed a novel algorithm to generate a proper distribution of robot arm collision data in C-space using FCL.
- Successfully trained a deep neural network to predict collision results with high accuracy.
- Wrote an inference engine using C++, which produces the output within approximately 300 nanoseconds.
- Developed a hybrid motion planning algorithm, which is almost twice as fast as the state of the art RRT algorithm.

Teaching Assistant, Columbia University Feb. 2019 ~ Present

- Tutored over 60 students in coding projects and maintained website for CSMM. 103x Introduction to Robotics.

RESEARCH EXPERIENCE

Gait Analysis Based on Deep Learning Feb. 2019 ~ Present

Advisor: Prof. Sunil Agrawal & Antonio Prado

- Preprocessed the data collected by multiple insole sensors by down-sampling and segmentation.
- Trained a deep neural network to analyze the gait of the subject using an Encoder-Decoder module and recurrent layers. The finalized model can predict a gait cycle percentage within a 7 percent error at 30Hz.

The Mechanical Property of Carbon Fiber Composites in Unmanned Aerial Vehicle Dec. 2017 ~ Jun. 2018

Advisor: Prof. Pengfei Hou

- Built a precise model of a real-world unmanned aerial vehicle using SolidWorks.
- Examined the stability and strength of UVA fuselages made of different materials using Abaqus.
- Applied the evolutionary algorithm to optimize the carbon fiber laminates using Abaqus Python API and eigenvalue buckling analysis module. The critical buckling load of the frame increased threefold after the optimization.

Optimization Design for Methanol Fuel Cell Channel Nov. 2016 ~ Jun. 2017

Advisor: Prof. Xu-Qu HU

- Designed and conducted experiments on three different types of fuel cell channels.
- Recorded the output power and compared the data against the CFD simulation result.

PUBLICATIONS & PATENTS

- Antonio Prado, Xiya Cao, Xiangzhuo Ding, Sunil Agrawal, Prediction of Gait Cycle Percentage Using Instrumented Shoes with Artificial Neural Networks. *IEEE ICRA*, 2019 (under review)
- CN Patent ZL 2016 2 1091311.4: "Intelligent Electric Self-Balancing Scooters", April 19, 2017
- Xiangzhuo Ding, Rui Zhou, Hao Niu, Zheyang Hu, Xiangping Liao, Polarization Phenomenon of Natural Light Through Polarizer. *Physics Bulletin*, 2016

SKILLS

Programming: Python, C++, Matlab, ROS, Linux, Docker, Git, TensorFlow, PyTorch,
Software: Ansys, Abaqus, NX UG, Inventor, SolidWorks.