Xinsheng GU

xg2381@columbia.edu | www.linkedin.com.in.xinsheng-gu | (646)-321-5939

EDUCATION

Columbia University, *New York, NY* 09.2021 - 12.2022
- ➢ Master of Science in Mechanical Engineering with concentration in Robotics and Control
- ➢ GPA: 3.92

Fudan University, *Shanghai, CN* 09.2017 - 06.2021
- ➢ Bachelor of Science in Theoretical and Applied Mechanics

Aalto University, *Helsinki, FI* 01.2020 - 05.2020
- ➢ Academic exchange program

RESEARCH PROJECT EXPERIENCE

The Inverse Problem of Magnetic Bending Beams Based on Genetic Algorithm, *Graduation Thesis* 09.2020 - 06.2021
Author; Advisor: Dr. Fan Xu (Professor), Institute of Mechanics and Computational Engineering, Fudan University
- ➢ Reviewed literature and made a presentation to illustrate research background, research status and thesis framework
- ➢ Obtained a numerical solution of magneto-induced bending by combining FEM and numerical computation
- ➢ Designed a new method for inverse problem-solving strategy by using Genetic Algorithm
- ➢ Created three application scenarios based on above inverse problem-solving strategy, demonstrated application potential of magnetically driven soft materials in liquid transport

SELECTED COURSE PROJECTS

Evolving Morphology Soft Robots *Course: Evolutionary Algorithm & Design Automation* 09.2021 - 12.2021
- ➢ Built a 3D physics simulator for bouncing and breathing cube robots, and animated the motion of robots with Open3D
- ➢ Introduced genetic algorithm as evolving strategy to maximize the moving velocity of robots by optimizing morphology and mechanical parameters of cubes, operated high-performance parallel computing on Google Cloud Platform

Library Assisting Robot *Course: Introduction to Robotics* 09 .2021 - 12.2021
- ➢ Designed a wheelchair-attachable robotic arm to assist the disability to grasp books away from reachable area in libraries, built the robot model and conducted force analysis with SOLIDWORKS
- ➢ Obtained the solution to forward kinematics and inverse kinematics founded on Denavit-Hartenberg coordinate system, and verified the solution with dynamic simulation using MATLAB toolbox
- ➢ Concluded the work in the final paper using IEEE format and made a presentation

Data Analysis *Course: Data Science for mechanical system* 09.2021 - 12.2021
- ➢ Explored interesting topic of dataset from UCI Machine Learning Repository, Kaggle, and Google Dataset
- ➢ Carried out multiple methodology including EDA, linear regression, PCA, and K-means to study the dataset with Python as programming language
- ➢ Drew a conclusion from visualized dataset plots and statistical analysis

Interaction Design *Course: Creative Coding* 04.2020 - 05.2020
- ➢ Wrote a plot about space travelling and ways of interaction with mouse and keyboard
- ➢ Simulated motions and mutual forces between 10+ objects in two-dimensional space by JavaScript programming
- ➢ Accomplished a game named Interstellar

Simplification of a Dynamic System *Course: Fundamentals of Vibration* 09.2019 - 10.2019
- ➢ Simplified Lagrange Equations according to mechanical properties of the system and vectorized the equations
- ➢ Verified a simplified equation by calculating eigenvalues with MATLAB
- ➢ Sorted out a thesis with the name of Simplification of a Dynamic System and made a class presentation

SKILLS

- ➢ **Technical Skills:** MATLAB & Simulink; ANSYS; AutoCAD; SOLIDWORKS; Python; JavaScript; Fluent; Google COLAB; Google Cloud;
- ➢ **Language:** Chinese (native); English (proficient); Japanese (intermediate)