Xinsheng GU

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EDUCATION

Columbia University *New York City, US* 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
- 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

Automatic Laser Cutting Box *Course: Digital Manufacturing* 01.2022 - 02.2022
- Wrote a software-driven fabrication software in MATLAB, which could generate flat patterns as an SVG file for making an acrylic box by inputting the dimensions of the box you want.
- Operated the laser-cutter with the automatically generated file to cut acrylic sheets and then folded into a box

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* 01.2020 - 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

WORK EXPERIENCE

Columbia University *New York City, US* 01.2022 – 05.2022
Course Assistant; MECEE4100 Mechanics of Fluids; Instructor: Prof. Vijay Vedula
- Held office hours for students every week and was responsible for grading assignment and exam submissions

SKILLS

- **Technical Skills:** MATLAB & Simulink; Python 3; JavaScript; C programming; SSH; HTML/CSS; ANSYS; AutoCAD; SOLIDWORKS; OpenSCAD; Google Cloud Platform
- **Language:** Chinese (native); English (proficient); Japanese (intermediate)