Xingjian LI

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EDUCATION

National University of Singapore (NUS)	01/2023 - 01/2024
Master of Science in Robotics	GPA: 4.8/5.0
Xi'an Jiaotong University (XJTU)	08/2017 - 07/2021
Bachelor of Engineering in Mechanical Engineering	GPA: 86.94/100
Honors: XJTU Excellent Undergraduate Graduation Project, Top 1% (07/2021)	3.72/4.0(WES)
University of Wisconsin-Madison (UW-Madison)	01/2019 - 05/2019
Visiting International Student Program	GPA: 3.7/4.0

RESEARCH/PROJECT EXPERIENCE

Robot Grasp of Randomly-placed Blanket on Object (Course Project)　　08/2023 - 12/2023
Course Project Leader, NUS

- Collected RGB images and corresponding depth information of randomly-placed color-labelled blankets via a RGBD camera into a dataset.
- Trained semantic segmentation models for randomly-placed color-labelled blankets to recognize their corners and edges using UNet and DeepLabV3+.
- Controlled the Franka Emika robot arm to grasp the blanket at specified edge with a specified angle based on semantic segmentation results and point cloud reconstruction.

Semantic Segmentation of Gastric Cancer Laparoscopic Surgery Videos　　04/2023 - 10/2023
Research Assistant, NUS

- Constructed a self-collected gastric cancer laparoscopic surgery video dataset (4 videos, 500 key frames), which is specially annotated for recognizing safe zone (where laparoscopic surgical instruments can safely cut and go deep) and critical organs.
- Collected, standardized, categorized, filtered and annotated laparoscopic surgery videos under surgeons' supervision.
- Trained laparoscopic surgery video semantic segmentation baseline models on repaired CholecSeg8k dataset using UNet, UNet++, DeepLabv3 and DeepLabV3+ models.

Preparation and Performance Test of Carbon-nanotube Terahertz Detectors　　11/2021 - 08/2022
Research Assistant, XJTU

- Prepared carbon nanotube (CNT) films by wet methods, specifically, dispersed CNT powder into organic solvents using an ultrasonic crusher, and preparing 5-micron-thick CNT films using vacuum filtration.
- Executed vapor deposition of metal electrodes (Au and Al) onto CNT films covered with metal mask to produce thermoelectric terahertz detectors using magnetron sputtering machine and electron beam evaporation system respectively.
- Engaged in the terahertz response measurement of CNT-based detectors using Terahertz Time-Domain Spectroscopy (THz TDS) system and thermoelectric response measurement using Terahertz Quantum Cascade Lasers (THz QCL) system and a lock-in amplifier.

Hydraulic Equipment Failure Type Identification and Failure Prediction　　08/2021 - 03/2022
Research Assistant, XJTU

- Produced four faulty bearings with different lengths of wear on the inner race and four solenoid valves with different levels of wear on the outer surface of the spool.
- Measured the vibration data on a hydraulic test rig with faulty bearings and faulty solenoid valves respectively using piezoelectric vibration sensors, and collated into two corresponding datasets.
- Utilized ResNet50 to perform fault diagnosis and life prediction on bearings and solenoid valves.

Geometrical and Vibrational Properties of a Clamped-clamped Beam under   02/2020 - 07/2021
Large Deformation (Excellent Undergraduate Graduation Project)
Undergraduate Research Assistant, XJTU

- Simulated the buckling characteristics and vibration modal response of a clamped-clamped beam fixed on a flexible substrate with different levels of pre-strain using ABAQUS (3D) and ANSYS APDL (2D).
- Acquired the formula for the buckling form of the clamped-clamped beam at different two-end compression displacements utilizing perturbation method.
- Used polyimide (PI) to produce and simulate the rectangular test strips with matching parameters in FEA, carried out buckling experiments by securing both ends on a self-designed tensile-compression test rig, and observed the buckling behavior under different parameters.
- Used flexible piezoelectric sensors to detect vibration intensities at different points on the buckled beam under 0 to 500Hz vibration produced by a shaking table.

Swarm Intelligence Algorithms in Flexible Job Shop Scheduling Problem (FJSP)   02/2020 - 12/2020
(Course Project)
Course Project Leader, XJTU

- Designed a FJSP data generation method with eight workpieces, six machines, and six jobs.
- Utilized genetic algorithm, ant colony optimization algorithm and particle swarm optimization algorithm respectively to solve the FJSP problem with randomly-generated datasets.
- Plotted Gantt charts for the FJSP problem.

A Walkway Ladder Design (Course Project)   05/2019 - 12/2019
Course Project Leader, XJTU

- Investigated the demand for the walkway ladder in the elderly community and measured real parameters.
- Utilized MATLAB to calculate and do strength checks of all parameters of the speed reducer in the walkway ladder based on real parameters.
- Utilized SolidWorks to model the worm gear speed reducer and convert the 3D model into standardized 2D drawings using AutoCAD.

PROFESSIONAL EXPERIENCE

CD Capital, Department of Medical Device Investment, *Investment Analyst Intern*   11/2022 - 11/2023
- Involved in investment analysis on medical devices, mainly about ophthalmology surgical robot, endourology surgical robot, and minimally invasive neuromodulation device.

Xi'an Jiaotong University, School of Mechanical Engineering, *Research Assistant*   08/2021 - 08/2022
- Involved in 'Preparation and Performance Test of Carbon-nanotube Terahertz Detectors' project.
- Involved in 'Hydraulic Equipment Failure Type Identification and Failure Prediction' project.

GE Healthcare (Wuxi), Department of Anesthesia Machine, *Summer Intern*   06/2019 - 07/2019
- Involved in the CAD drawing, acid resistance test, fatigue test, and tightness test for the anesthetic machine.

SKILLS

- Engineering Software: Abaqus; Ansys APDL; SolidWorks; AutoCAD; COMSOL
- Computer Languages: MATLAB; Python

AWARDS

Xi'an Jiaotong University, Second Prize in Excellent General Course Outcomes   11/2021
Xi'an Jiaotong University, School-level Second Scholarship   05/2020
Beijing SMC Educational Foundation, Second Scholarship   05/2019