Bryan Lijie Chew

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Education

Singapore University of Technology and Design **Est Graduation: 2024**
Master of Engineering (Research), NLP

- Selected as one of 3 students for the pilot of SHARP Concurrent BEng-MEng Degree Pathway (CDP), taking an accelerated Master program due to excellent research performance.

Bachelor of Engineering, Engineering Product Development, Robotics Specialization 2020 - 2024

- Recipient of SUTD Global Distinguished Scholarship for high academic performance.
- Enrolled under the prestigious SUTD Honours and Research Programme (SHARP), taking up advanced Honours Sessions and research projects and securing SGD15K in research funds.

Stanford University, International Honors Program **Summer 2023**

Pohang University of Science and Technology, Term Exchange **Fall 2022**

Professional Experience

DeCLaRe Lab | Research Assistant, AI & NLP **June 2023 – Current**

- Developed and implemented new innovations involving Mixture of Experts and Hypernetworks into Large Language Models (LLM) and Text-to-Speech (TTS) models using PyTorch and Huggingface.
- Responsible for the design and engineering of a state-of-the-art multimodal TTS model using FLAN-T5 and a Diffusion model for zero-shot learning which was implemented using a multi-GPU setup using Deepspeed.
- Trained and evaluated the performance of these models for use in publications in preparation.

Bosch Group | Intern, Robot Engineer **January 2023 – June 2023**

- Created an autonomous 3D reconstruction system robotic software system for object scanning, that has object adaptable scanning patterns and implemented in two industrial robot arms using ROS, Point Cloud Library and Moveit.
- Integrated it into a disassembly process in collaboration with Advanced Remanufacturing and Technology Centre (ARTC).
- Built and integrated a user interface using MQTT and Qt as well as a Computer Vision (CV) model for use in a disassembly innovation in the process of being patented with over 30% contribution.

SGInnovate AiT Project | R&D Intern **July 2021 – August 2021**

- Developed a perception pipeline to measure object dimensions for use in pick-and-place actions using ROS and Point Cloud Library and assisted in setting up of a robotic arm and its proprietary sensors.

School Extra-Curricular and Projects

Capstone Programme (NCS SG) **2023 - 2024**

- Developed a robot for refuse bin replacement, integrating NCS's mobile base and custom navigation stack. This involves the design of the robot frame and mechanisms as well as new movement algorithms for robot control.

Undergraduate Research Opportunities Programme **2020 - 2022**

1) **Project: Coil designs for TMS with a static negative permeability metasurface**
- Prototyped a novel transcranial magnetic stimulation coil designs and developed a testing rig for the evaluation of its effectiveness.
2) **Project: Designing a Socially Interactive Robotic Animal Bookshelf for Shared Reading Spaces**
- Invented a socially interactive robotic bookshelf to encourage children to read more. Designed a Human-Robot Interaction (HRI) experiment to assess the robot and had it endorsed by SUTD's Institutional Review Board.
- Developed a novel continuum robotic mechanism and fabricated a working prototype of the entire robotic bookshelf independently, including developing all hardware and software.
- Cowrote a paper on the experiment's results that is published and presented in IEEE RO-MAN 2023 (**DOI: 10.1109/RO-MAN57019.2023.10309655**)

30.007 Engineering Design Innovation **2022**

- Led a five-student team in creating Pandoknee, a pneumatic soft knee exoskeleton for elderly mobility, incorporating innovative pneumatic artificial muscle research.

Additional Information

- Nationality: American (Singapore Permanent Resident)
- Languages: English (native), Chinese (beginner)
- Programming Languages: Python, C++, MATLAB, SQL
- Skills: Microsoft Office, Adobe Illustrator, Solidworks, Fusion 360, Arduino, ROS, REST
- Interests: Machine Learning, Robotics, Internet of Things
- Availability: 3 Feb 2025