Kaustav Mukherjee

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Fourth year mechanical engineering student at the National University of Singapore with hardware and software experiences. I've worked on many multidisciplinary engineering projects, led and mentored a UAV competition team, and interned in San Francisco as a software engineer at a medtech AI startup.

WORK

Software Engineering Intern / Kaliber Labs
January 2023 - December 2023

- Languages: Python, C, C++, Bash
- Tensorflow, Keras, PyTorch, OpenCV
- Implemented image processing pipeline for an MRI segmentation model and trained a pix2pix MRI modality conversion model.
- Trained a surgery image quality classifier model and generated artifical data to increase accuracy to 87%.
- Generated artificial surgical tool images with Neural Radiance Fields (NERFs) and fine-tuning stable diffusion.
- Designed and programmed linear rail rig for testing a measurement AI model.

Systems Engineering Intern / F-Drones
May 2022 - October 2022

- Set up and created company SOP for SITL (Simulation-in-the-Loop) using ArduPilot, Solidworks, and 3DS Max.
- Diagnosed critical autopilot bug with SITL.
- Overhauled drone communication system, enabling beyond visual line of sight (BVLOS) coverage and >95% delivery consistency.
- Communicated with suppliers, performed mechanical and electrical integration with drones, and coordinated testing team.
- Created Lua scripts and modified Ardupilot code for safety and control features.

Robotics Intern / Scifie Robotics
March 2021 - August 2021

- Conducted R&D, prototyping, and design for a magnetically-mounted robot for surface maintenance of large metal structures.
- Developed Solidworks models, engineering drawings, and performed GD&T.
- Built relationships with manufacturers and parts suppliers, i.e. Olympus, Klenco.
- Redesigned a WAGO PLC control system and interface to fine-tune robot controls.

EDUCATION

Bachelor of Engineering in Mechanical Engineering / National University of Singapore
August 2020 - May 2024 (CAP 4.71)

- Innovation and Design 2nd Major (iDP)
- Aeronautics Specialization
- Exchange at **Stanford University Centre for Professional Development** (SCPD) in 2023

EXPERIENCE

Chief Engineer / AeroNUS Competition Team
July 2021 - April 2022

- Led team of 10 students to develop a UAV for the AIAA DBF 2022 competition by managing team roles, timeline, and tasks.
- Wrote a Multi-Disciplinary Design Optimization (MDO) program on MATLAB to determine plane sizing.
- Designed wings, tail, fuselage, and circuitry using XFLR5 and Solidworks for stability, aerodynamic, and structural modelling.
- Wrote Arduino script for payload delivery.
- Manufactured UAVs with carbon fibre, laser cutting, CNC milling, and 3D printing.
- Established training program for future team.

Vice President / iDP Students' Club
January 2021 - December 2022

- Spearheaded an internship program for iDP students, sourcing over 60 internships from over 20 companies and accelerators.
- Guided subcommittees with logistics, external liaising, and planning for events with over 1000 total participants over two years.

Research Project with Invigilo AI
August 2021 - November 2021

- Implemented various CNN models using Pytorch for helmet detection in construction sites under guidance of startup Invigilo AI.

SKILLS

Design for Manufacturing	O O O	Python	O O O	Ardupilot	O O O
Machine Learning with Python	O O O	Linux	O O	Circuit Design	O O
Aerodynamics, Sizing, Design	O O O	Arduino	O O O	Matlab	O O O
Manufacturing and Machining	O O O	Raspberry Pi	O O O	Solidworks	**CSWP Cert**