

Dr Kow Jun Wai

Medical Device Development Engineer

PhD Mechanical Engineering in Soft Robotics: Surgical Technologies & Medical Devices

BEng, MSc Mechatronics & Robotics Engineering

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Work Experience

Medical Device Development Engineer – Atlas Endoscopy Ltd (Aug.2020 – Present)

Lead systems developer towards device integration, and management of operator controls on a robotic endoscope platform for a novel robotic arm assisted endoscopic capsule device.

Atlas Endoscopy, UK, spin-off company from STORM Labs, University of Leeds.

- Lead the design, development, and testing of advanced endoscope systems, with a focus on colonoscopes.
- Oversee the integration of cutting-edge technologies such as imaging, optics, and robotics to improve colonoscope functionality and performance.
- Directed and executed detailed design reviews and performance design FMEAs, ensuring compliance with MDR standards for regulatory submissions and approvals (MHRA, UK; IRB/FDA, US).
- Led device development and integration of endoscopic robotic systems with NHS hospital systems, fostering seamless compatibility and collaboration with Leeds General Infirmary and St James University Hospital (UK), as well as Vanderbilt University Medical Center (US).
- Oversaw usability and validation tests with partnered clinical staff to evaluate the efficacy of product design requirements, aligning development with user needs and clinical best practices.
- Lead cross-functional reviews to conduct risk assessments, quality management, and validation activities, ensuring that all products meet or exceed regulatory expectations and ensured adherence to rigorous regulatory standards including ISO 13485, IEC 60601, ISO 8600, ISO 14971, ISO 15189, ISO/IEC 17025, and ISO 10218, safeguarding product conformity and quality.
- Led as a systems and software engineer for the inception and development of a ground-up colon simulator training kit, demonstrating prowess in innovative medical training technology development.

Research Associate in Medical Device Development – STORM Labs (Oct.2019 – Aug.2020)

Prior to completion of my PhD, was scouted into a budding spin-off company to drive the development of a robotic endoscope platform and design system integration devices to existing hospital technologies and operations for clinical investigation.

- Engineered and designed an ergonomic hand-held device to control a 6-DOF robotic arm (LBR MED - KUKA Robotic Arm), integrating onboard electronics, demonstrating adeptness in medical device design and development.
- Orchestrated the seamless integration of standard endoscopic ancillary functions into a bespoke hand-held device on a robotic platform, ensuring optimal functionality and clinical compatibility.
- Executed comprehensive risk management plans, assessments, and analyses on project sub-systems, ensuring adherence to regulatory requirements and mitigating potential hazards.
- Oversaw the operational effectiveness of system development and deployment, ensuring alignment with project goals and objectives while maintaining compliance with industry standards.
- Collaborated on pre-clinical assessments of developed systems in animal and/or cadaveric models in partnership with clinical collaborators, enabling real-world validation of system performance and safety.
- Provided expert guidance and support on bespoke soft-manufacturing methods for ongoing research work within STORM Labs, contributing to the advancement of innovative medical device technologies.
- Adhered to regulatory standards such as ISO 13485, ISO 8600, and IEC 60601-1, ensuring that all developmental activities align with international medical device regulations and quality standards.

University of Leeds

Teaching Assistant (Sept.2013 – Sept.2019)

Teaching assistant and Laboratory demonstrator to lecturers to provide guidance to students and oversee teaching materials during laboratory sessions.

Research Assistant in Soft Robotic Devices (Oct.2015 – Oct.2016)

Developing new methods for sensing and actuation in soft robotics while aiding on-going research work for PhD students and research staff within the Surgical Technologies Laboratory (now Healthcare Mechatronics, 2021).

- Responsible for the deployment, calibration and maintenance of several test and measurement platforms in the laboratory (e.g., Instron Tensile Tester, Keyance Optical Microscope, ThorLabs linear actuation stages and optical/laser measurement platform).
- Programmatically designed DAQ software via NI LabVIEW onto test & measurement platforms for data collection, analysis, and output.
- Provided scientific and engineering expertise to solve problems and perform statistical analysis of data to support device/development projects
- Responsible for operations, maintenance, and user-training of several manufacturing equipment in the laboratory (e.g., Vacuum-Cast machine, Laser cutter/engraver, Centrifugal mixer, Liquid dispenser, 3D printers (FDM, SLA, SLS)).
- Managed general operations in-line with University's laboratory standards and health & safety requirements.
- Assisted in identification, procurement, development of needed laboratory consumables, manufacturing, and test equipment.
- Test device and platform development and integration with existing NHS Hospital capabilities (Leeds General Infirmary, Leeds (UK); St James University Hospital, Leeds (UK)).

Research Intern (Jul.2015 – Sept.2015)

An EPSRC funded research internship project to develop soft robotics in the field of surgical technologies at the University.

Peer Mentor/Student Guide (Sept.2013 – Sept.2017)

Showcasing student projects and to help and guide parents and prospective students around the department. Pastoral support to first year students in the school at the University.

Education

University of Leeds, School of Mechanical Engineering (UK): 2016-2020

PhD Mechanical Engineering in Soft Robotics: Surgical Technologies

Thesis Title: [Development of a Fabrication Technique for Soft Planar Inflatable Composites](#)

University of Leeds, School of Electronics & Electrical Engineering (UK): 2014-2015

MSc Mechatronics & Robotics Engineering- *Pass with Distinction*

MEIBioEng15: [Towards Self-Tuning Lower Limb Prosthesis](#)

University of Leeds, School of Electronics & Electrical Engineering (UK): 2011-2014

BEng Mechatronics & Robotics Engineering- *First Class Honours*

Dissertation Title: [Artificial Intelligence Based Control on a Solar Energy System](#)

SEGi University College (Malaysia): 2010-2011

Foundation in Science- **3.24/4 CGPA**

Certification & Training

- Quality Management System for Medical Device Directives - PA Consulting, UK
- Certified SOLIDWORKS Associate (CSWA) Graphic
- Certified LabVIEW Associate Developer (CLAD), National Instruments UK & Ireland
- Code-cademy- Web Development (HTML, CSS, JavaScript) and Python 2/3
- ALLSAFE-Food Hygiene Distance Learning course, Advance Food Safety Ltd, UK

Interests & Skills

- **Manufacturing Experience:** Additive manufacturing (FDM, SLA, SLS, CL); Laser cutting/engraving; CNC machining; Vacuum casting; Moulding and Casting (Including Extrusion, Die and Injection);
- **IT Competency:**
 - **Programming languages:** C/C++ ; MATLAB; NI LabView; Python; HTML; CSS; ROS;
 - **Computer Aided Design:** Solidworks; SketchUP; OpenSCAD; Autodesk Fusion 360;
 - **Graphic Design:** Adobe Illustrator; CorelDRAW; Inkscape;
 - **Electrical/Electronic Design:** NI Multisim; Eagle PCB;
 - **Finite Element Analysis (FEA):** Abaqus FEA.
- **Productivity:** Microsoft Office suite- Slack; Trello; Obsidian; VSCode, Notion.