

KYLE L. WALKER

Robotics Engineer

klw.com

walker12@live.co.uk

+447491955824

https://github.com/klw

Edinburgh, U.K.

linkedin.com/klw

SUMMARY

Passionate robotics engineer with expertise in modelling, control and implementation of marine and soft robotic technologies. Experience in academic research and industrial product development, often securing funding to progress concepts into physical prototypes to positively impact the field. Keen collaborator with a desire to forge connections and fuel cross-sector innovation, transitioning ideas from the lab to the real-world.

SKILLS

Programming: Python, C++, MATLAB, ROS, ROS2.

Software: CAD, PCB Design, Git, Arduino, Raspberry Pi, WAMIT, LaTeX, Microsoft

Technical: Control Theory, Dynamics, Modelling, Mechatronics, Electronics, Hydrodynamics, Programming, Manipulation

Soft/Core: Project Management, Public Speaking, Problem Solving, Flexibility, Supervision, Strategic Planning, Adaptability.

EDUCATION

09/2019 –
09/2023

Ph.D. Robotics (Marine/Soft)

University of Edinburgh

- Fully Funded via EPSRC DTP Scholarship Award; aligned with ORCA Hub UK consortium.
- Thesis title: *"Preview-Based Control Methods for Ocean Wave Disturbance Mitigation for Underwater Robots"*.
- Several publications in high-impact journals and conferences.
- Established collaborations through workshop hosting and event organisation.
- Supervised B.Eng and M.Eng students throughout dissertation projects.

09/2014 –
06/2019

M.Eng. Electrical and Mechanical Engineering

University of Strathclyde

- Grade: 1:1
- Thesis title: *"Design of a Low Cost Myoelectric Prosthetic Hand"*.
- Key Modules: Advanced Systems Engineering, Power Electronics, Signals & Systems, Instrumentation & Microcontrollers, Engineering Management.

EXPERIENCE

03/2023 –
Present

Robotics Engineer

The National Robotarium

- Develop and implement robotic technologies and solutions in collaboration with industrial partners across all sectors. Projects contributed to have covered marine robotics, soft robotics and prosthetics.
- Project requirements are scoped based on the clients desires and subsequently refined based on engineer input; this includes project budgeting, defining deliverables, key milestones and project timelines amongst other management tasks.

05/2021 –
03/2023

Lead Electronic Design Engineer

Bioliberty

- Technical lead for Bioliberty, a Med-Tech start-up, taking onus over early-stage prototyping of their initial product - a soft robotic glove for assisting and rehabilitating people who have suffered a stroke or have conditions such as Multiple Sclerosis (MS).
- Drove advancement towards a Minimum Viable Product (MVP)- designed, prototyped and validated hardware functionality including machine-learning based Electromyography (EMG) control.
- Bioliberty recently secured £2.2m funding from investors; funding round led by Archangels.

06/2017 –
09/2018

Electronic Circuit Design Intern

MBDA U.K.

- Summer intern for two consecutive years designing and manufacturing PCB's for future concept products.
- Invited to return in 2018 based on performance in 2017. Offered graduate role but opted to pursue a PhD.

PROJECTS

Ph.D.

Preview-Based Control Methods for Ocean Wave Disturbance Mitigation for Underwater Robots

Developing improved control strategies for underwater vehicles in harsh and turbulent seas to facilitate operation around marine renewable devices.

Intl. Academic
Visit

Design of Variable Stiffness Soft Robotic Manipulators

International collaboration with Tohoku University, Japan (JSPS fully funded, \approx 5k) designing manipulators based on continuum concepts, incorporating tunable stiffness into the design.

Intl. Academic
Visit

Predictive Wave Disturbance Mitigation for Underwater Soft Robotic Manipulators

International collaboration with TU Delft (Saltire/SUPA fully funded, \approx 5k) modelling unsteady fluid disturbances on soft robotic manipulators and implementing predictive control.

Industry	Continuum Manipulators for Offshore Applications Partnership with Senai Cimatec and Shell Brazil, developing highly articulated manipulators for maintenance and inspection of offshore platforms and subsea structures.
Academic	Shape Sensing E-Skins for Deformable Structures Collaboration with researchers at The University of Edinburgh, supporting experimental validations of electronic skins for touch sensing and shape estimation of deformable bodies.
Industry	Barclays DeepTech Launchpad Technical Support Providing engineering support to start-up companies selected for the program. Each company is given financial support to fund collaboration with National Robotarium engineers. Infinity DPM (prosthetics) and ScrubMarine (subsea robotics) were the two companies I supported.

SELECTED PUBLICATIONS

05/2024	A Modular, Tendon Driven Variable Stiffness Manipulator with Internal Routing for Improved Stability and Increased Payload Capacity IEEE International Conference on Robotics and Automation (ICRA)
04/2024	Model Predictive Wave Disturbance Rejection for Underwater Soft Robotic Manipulators IEEE International Conference on Soft Robotics (RoboSoft)
10/2023	Disturbance Preview for Non-Linear Model Predictive Trajectory Tracking of Underwater Vehicles in Wave Dominated Environments. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
08/2021	Hydrodynamic loads on a restrained ROV under waves and current Ocean Engineering
12/2021	Analysis of station keeping performance of an underwater legged robot IEEE/ASME Transactions on Mechatronics
04/2021	Experimental validation of wave induced disturbances for predictive station keeping of a remotely operated vehicle IEEE Robotics and Automation Letters

ACCOLADES

IET Postgraduate Award – Electronics Weekly Brightspark – IET Travel Grant
Emerging Researcher Travel Grant (Saltire Scotland, SUPA) – Summer Program Fellowship Grant (JSPS)
Doctoral Training Partnership (DTP) Scholarship (UKRI EPSRC)

PROFESSIONAL MEMBERSHIPS

Institute of Electrical and Electronic Engineers (IEEE) – IEEE Robotics and Automation Society –
STEM Learning UK

INTERESTS

Football, Cooking, Baking, Scuba Diving, Golf, Music.

CERTIFICATIONS

Mental Health First Aid Course, NHS Scotland – Open Water Diver, Dive RAID.

LANGUAGES

English (Native), Spanish (2 - Limited working proficiency)

REFEREES

Manager	Stewart Miller E-mail: s.miller@hw.ac.uk	CEO, The National Robotarium
Prior Supervisor	Dr. Francesco Giorgio-Serchi E-mail: F.Giorgio-Serchi@ed.ac.uk	Lecturer, The University of Edinburgh
Prior Supervisor	Dr. Adam A. Stokes E-mail: Adam.Stokes@ed.ac.uk	Professor, The University of Edinburgh
Prior Manager	Rowan Armstrong E-mail: rowan@bioliberty.co.uk	CEO, Bioliberty