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Jianwei Liu

Education

University College London (London, UK; 2022-present)	PhD Foundational AI/Robotics, in progress
University College London (London, UK; 2021-2022)	MSc. Robotics and Computation, Distinction
King's College London (London, UK; 2016- 2017)	MSc. Robotics, Merit
Imperial College London (London, UK; 2011 –2015)	MEng. Biomedical Engineering, 2:1
Sussex Downs College (Lewes, UK; 2009 - 2011)	A-levels: Maths (A*), Further Maths (A*), Physics (A) and Chemistry (A)

Employment

INNVOTEK (Cambridge, UK; Nov 2020 – Sep 2021)

Engineer (Software/Robotics) (Continuation of InnoTecUK employment due to merger of the companies)

- Undertook development of machine learning based pipelines for detection of defects in infrastructures such as dealing with timeseries data from sensors embedded in railway bridges and X-ray image data from wind turbine blades.
- Continued research and development of ROS based software stack for navigation, localisation, control and visualisation of robotic platforms in harsh offshore underwater and construction site environments.

InnoTecUK (Cambridge, UK; Mar 2018 – Oct 2020)

Engineer (Software/Robotics) (Jan 2019 – Oct 2020)

Graduate Engineer (Mar 2018 – Dec 2018)

- Successfully led Innovate UK funded R&D robotics projects involving magnetic climbing robots for offshore wind turbines and fully autonomous ground robot for construction sites.
- Research and development of ROS based software stack for navigation, localisation, control and visualisation of robotic platforms for use in offshore and construction applications.
- Provided technical repots and presentations for internal managements and external funding bodies.
- Communicating with colleagues and external partners to coordinate work and integrate systems.

Provided general software development support to other non-robotics projects.

Selected Publications (see personal website for full list)

- M Stamatopoulou*, J Liu*, et al. "DiPPeST: Diffusion-based Path Planner for Synthesizing Trajectories Applied on Quadruped Robots" **IEEE IROS 2024**
- J Liu*, M Stamatopoulou*, et al. "DiPPeR: Diffusion-based 2D Path Planner applied on Legged Robots", **IEEE ICRA 2024**
- J Liu*, S Lyu*, et al. "ViT-A*: Legged Robot Path Planning using Vision Transformer A*", **IEEE Humanoids 2023**

Selected Projects (see personal website for details)

RadBlad - In-service X-ray radiography of offshore wind blades (INNVOTEK, Nov 2020 – Jun 2021)

- Innovate UK funded project (ref. 104827)
- Project to develop a robotic x-ray inspection system for off/on-shore wind turbine blades.
- Developed, trained and deployed a ML based defect detection pipeline implemented in TensorFlow and Keras to automate the processing of X-ray inspection images.

COSCR - Collaborative, On-Site Construction Robot (InnoTecUK, Apr 2019 – Mar 2021)

- Innovate UK funded project (ref. 104606)
- Project to develop a fully autonomous construction robot platform to perform drill task at height that can work directed off BIM/CAD of building site whilst operating in a safe manner along human workers.
- Acted as technical lead/coordinator in InnoTecUK to coordinate efforts of Mechanical, electronics and software teams
- Developed of Gazebo based simulation to speed up software developments whilst hardware is being built
- Developed and tuned ROS based autonomous localisation and path planning stack for the mobile base.
- Designed and carried out of test to validate built system

TrainNDT - A novel NDT (non-destructive testing) training system based on wireless probe tracking (InnoTecUK, Feb 2019 – Nov 2019)

- Innovate UK funded project (ref. 104606)
- Project to develop a cost-efficient training system for ultrasonic NDT inspectors utilising dummy ultrasonic probes and defect workpieces and a wireless tracking system.
- Developed the visual based tracking software backend for the simultaneous real time tracking of the probes and workpieces utilising ROS and Optitrack system.

RoBFMS - Autonomous, robotic and AI enabled biofouling monitoring, cleaning and management system for offshore wind turbine monopile foundations (InnoTecUK, Apr 2018 – Apr 2019)

- Innovate UK funded project (ref. 104079)
- Project to develop an amphibious magnetic climbing robot for the cleaning of biofouling on offshore wind turbine foundations
- Acted as technical lead/coordinator in InnoTecUK to coordinate efforts of Mechanical, electronics and software teams.
- Defined the overall software architecture
- Developed of Gazebo based simulation to speed up software developments whilst hardware is being built
- Development of ROS based localisation, teleoperation, control and visualisation software stack for the robot.

Skills

Programming Languages: Python, C/C++

Tools and frameworks: ROS (Robot Operating System), Pytorch, Git, TeX, MS Office, Solidworks, KiCAD