

Vittorio Francescon

 [vfrancescon.github.io](https://github.com/vfrancescon)

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 [Google Scholar](#)

Education

University of Leeds, STORMLAB UK

Sept 2022 - Aug 2026

PhD Surgical Robotics

Leeds, UK

- **Research Topic:** Shape-forming control of soft magnetic continuum robots for surgical applications.

University of Leeds

Sept 2021 - Sept 2022

MSc Mechatronics and Robotics

Leeds, UK

- **Relevant Courses:** Bio-inspired computing, Control Systems, Embedded Microprocessor & FPGA Development.
- **Research Project:** Helmholtz Coil Robot Manipulator

University of Liverpool

Sept 2017 - Jul 2021

BEng Mechatronics and Robotic Systems with Semester in China and Semester in Industry

Liverpool, UK

- **Relevant Coursework:** Electrical and Electronic Circuits and System, Programming in C, App development in C++.

Projects

FBG-Soft Robot Pose Reconstruction | C++, Python, ROS2, TCP

- Reconstruct full-pose of a soft robot from a 4-core 18-cell Fibre-Bragg Grating Sensor in real time
- Implemented an Unscented Kalman Filter to reduce noise in the reconstruction.
- Networked multi machine set-up parsing data from closed source hardware.

Magnetic Soft Robot Closed Loop Shape Controller | C++, Python, ROS1 | [Repo](#)

- Re-implemented custom hardware APIs in ROS1.
- Developed a visual servoing full-stack application to fully control the shape of a soft magnetic continuum robot.

Helmholtz Coil Robot Manipulator | C++, Matlab | [Repo](#)

- Developed low-level software to synchronously control a power-supply array and manipulate the magnetic field generated in a Helmholtz coil arrangement.

Experience

University of Leeds

Jun 2026 – Aug 2026

Temporary Post Doctoral Research Assistant

Leeds, UK

- Leading design and testing of early-stage robotic systems for locomotion in constrained environments and sensing of invasive zebra mussels within dry/submerged infrastructure. .
- Developing innovative sensing and control software solutions for bespoke applications (actuation, sensing, localisation and mapping in constrained, dark, wet environments such as pipes).
- Carry out early-stage feasibility studies on possible development avenues to de-risk overall project challenges.
- Maintain thorough project documentation, keep records of meetings and develop actionable points from minutes and prepare project progress reports to the funding body.

University of Liverpool

Jun 2021 – Sept 2021

Research Assistant

Liverpool, UK

- Designed and developed low-level software to interface with custom autonomous vehicle. Designed and developed high-level APIs of low-level software.

Technical Skills

Languages: C, C++, Python, MATLAB, Rust, CMake, $\LaTeX$ **Technologies:** ROS, ROS2, Git, Qt, CI/CD, RS232, TCP

Concepts: Robotics, Control Theory, Computer Vision, Embedded Software, Continuum Mechanics, Magnetics

Publications

J=Journal, R=Under Review

- [J.1] V. Francescon, et al. (2025). **Closed-Loop Shape-Forming Control of a Magnetic Soft Continuum Robot**. In *IEEE Robotics and Automation Letters*, pp. 6071 - 6078. IEEE. Apr. 25. DOI: 10.1109/LRA.2025.3565124
- [J.2] N. Murasovs, V. Francescon, et al. (2024). **Breathing Compensation in Magnetic Robotic Bronchoscopy via Shape Forming**. In *IEEE Robotics and Automation Letters*, pp. 9055 - 9062. IEEE. Jul. 2024. DOI: 10.1109/LRA.2024.3426385
- [J.3] P. Lloyd, N. Murasovs, Y. May, A. Bacchetti, B. Calme, V. Francescon, et al. (2026). **An MRI Actuated and Imaged Concentric Tube Catheter**. In *Nature Communications Engineering*. DOI: 10.1038/s44172-026-00636-1.
- [J.4] V. Francescon, et al. (2026). **Towards an MRI-Driven Robotic Cold-Snare System for Gastric Polyp Resection**. *Magnetic Medicine*, p. 100075, Jul. 2026,
- [R.1] V. Francescon, et al. (2026). **Pose Reconstruction for Magnetic Soft Continuum Robot via Fibre-Bragg Grating Sensors**. Under review for *Advanced Robotics Research*.