Joshua Brown PhD, FHEA, ACGI https://www.jb-robotics.com

Qualifications

PhD, Robotics – Queen Mary University of London *2018 – 2023*

- Developed interactive haptic interfaces for real-time robot operation in difficult environments
- Co-designer of a 3D printable face shield visor for COVID-19 protection, the second such product to gain medical certification in the UK. Over 3,000 of these visors were produced and used in London hospitals.
- Supported and formed collaborations between the Robotics Centre and Psychology and Medicine
- Co-founded a startup company, Human Robotix Ltd. to commercialize parts of my research
- Webmaster for the Centre for Advanced Robotics public website
- Awarded joint 2nd place in the UK Best PhD in Robotics Award competition 2023
- Awarded the Queen Mary Diploma of Researcher Development
- Funded by the EPSRC, IEEE and Queen Mary University of London

MEng, Electronic and Information Engineering, 2.1 (Hons) – Imperial College London *2014-2018*

- Developed a fingertip tactile display to present printed text, shape and colour to visually impaired users
- Presented at the Imperial College Festival and IEEE WorldHaptics 2021
- Awarded 85% mark and the Eric Laithwaite prize for outstanding innovation in an individual project
- Presented research projects to members of the public at three editions of the Great Exhibition Road Festival

Research Experience

- Haptics Research Associate – Department of Surgery and Cancer, Imperial College London (2023-*present*)
  Developing haptic simulations of medical examinations for use in the Imperial College Medical School. Proposer, PI and project lead for POLAR – Prosthetics and Orthoses for Limited Access Regions.
- Co-founder & Director of Engineering – Human Robotix Ltd. (2021-*present*)
  Leading the design and manufacturing of robots for use in rehabilitation and neuromechanics research.
- Visiting Scholar – Department of Mechanical Engineering, Massachusetts Institute of Technology (2025-2026)
  Investigating soft thermotactile display technology for use in cardiovascular medical simulations
- Visiting Researcher – Department of Mechanical Engineering, Seoul National University (2024)
  Designed and tested softness- and shape-changing haptic interfaces for use in surgical simulation.
- Visiting Researcher – Royal London Dental Hospital (2020-2023)
  Designed a 3D printed, personalisable stent for use in odontogenic cyst decompression, now in routine clinical use. Developed a method for 3D printing biocompatible ceramic materials for use in dental restoration in collaboration with a market leader in 3D printing (technical details under NDA).
- Teaching Assistant – Various departments, Queen Mary University of London (2019-2023)
- Visiting Researcher – Electronic Engineering and Computer Science, York University, Canada (2022)
- Research Assistant – Department of Bioengineering, Imperial College London (2020-2021)
- Research Assistant – Various departments, Queen Mary University of London (2019-2020)

Selected Publications

(Co-)author or inventor of 1 patent (pending, lead inventor) and 14 peer-reviewed publications (9 as first author)

- **J. Brown** and F. Bello, ‘Hardness changing tactile displays for simulating the feel of organic tissues’, Frontiers in Robotics and AI, vol. 11. Frontiers Media SA, Aug. 20, 2024.
- **J. Brown**, F. Bello, "Design and Characterisation of Particle Jamming-Based Variable Stiffness Displays using Non-Pneumatic Actuators," IEEE Haptics Symposium, Long Beach, 2024. **(Best paper honorable mention)**
- **J. Brown**, I. Farkhatdinov, "Soft Haptic Interface based on Vibration and Particle Jamming," IEEE Haptics Symposium, Washington DC, 2020. **(Best paper finalist)**
- **J. Brown** and I. Farkhatdinov, ‘Using Audio Recordings to Characterise a Soft Haptic Joystick’, Springer LNCS. Springer International Publishing, pp. 102–111, 2022.
- Full list available at https://www.jb-robotics.com/publications and Google Scholar

Selected Funding **(Total funding approx. £230,000)**

- Imperial College StudentShapers*^, £5,220 2024
- Imperial College Surgery and Cancer Seed Fund**^, £5,540 2024
- Imperial College-MIT Global Seed Fund*^, ~£35,000 2024
- MRC UK-Korea Biomedical Partnering Award*^, UKRI, ~£100,000 2023
- Dame Julia Higgins Postdoctoral Collaboration Award**^, Imperial College London, £2,900 2023
- Bart's and the London Charity Advancing Healthcare Grant*, ~£50,000 2021
- Globalink UK-Canada Doctoral Exchange^, UKRI & Mitacs, ~£12,000 2020
- IEEE Innovation in Haptics Award**^, IEEE Technical Committee on Haptics, $2,500 2018

* Co-I | ** PI | ^ Lead writer/proposer

Teaching

- Labs/tutorials: Skills for electronics/robotics engineering, Robotics design and build project, Interaction design
- Supervision: 19 MRes, MEng, MSc, BSc and iBSc project students working on topics ranging from haptics to biomaterials. 4 prize-winning students, 2 pursuing/pursued a related PhD, 5 presented projects at conferences.
- Leading the development of digital education tools for training Imperial College medical students in physical examination, surgical skills, dermatology and clinical communication.
- Regularly supports student attendance at conferences, including securing funding for three students to present their projects at ICRA@40 in Rotterdam.
- Advance HE Fellowship (FHEA) status awarded January 2025.

Awards

2nd place - UK Best PhD in Robotics Award (2024); Runner up for best poster, HSMR 2024 workshop on Haptics in Medicine (2024); Honorable mention for best paper, IEEE Haptics Symposium (2024); Engagement and Impact - Local Champion Award, QMUL (2021); Best paper nominee, IEEE Haptics Symposium (2020); Best poster, Materials Research Institute Christmas Symposium (2019); Imperial College Eric Laithwaite Prize (2018); Imperial College President's Scholarship (2014); Bloodhound SSC Award for Excellence in Engineering (2013); Advanced STEM Leaders Award (2013); Rolls-Royce Arkwright Engineering Scholarship (2012)

Invited Activities

- Invited presentation at TAROS2024 Best UK PhD in Robotics Session
- Invited presentation at a EuroHaptics 2024 workshop - https://www.youtube.com/watch?v=2DWNzQPqhn8
- Invited interactive demo at Haptics Symposium 2024 Cross-Cutting Challenges session on soft haptics
- Invited guest lecture on Haptics in Medicine, Seoul National University, 2024
- Invited seminar at the Healthcare Robotics (HeRo) Lab, Seoul National University, 2024
- Invited speaker, Korea-UK Workshop on Medical Robotics, 2024
- Invited seminar at the Laboratory of Intelligent Systems, EPFL, 2023
- Panellist for Imperial College Dame Julia Higgins Collaborative Grant
- Reviewer for IEEE Transactions on Haptics, Robotics and Automation - Letters, ICRA 2020, EuroHaptics 2020, ICRA 2021, EuroHaptics 2022, HAID 2022, RO-MAN 2024, RoboSoft 2025

Professional Activities

- Co-Chair, Imperial College Special Interest Group on Extended Reality (XR) in Education (*2023-present*)
- Co-organizer, "From virtual contact to clinical impact: exploring the role of touch in medicine and surgery" - a workshop presented at the Hamlyn Symposium on Medical Robotics (2024)
- Chair, PhD Student Representatives Committee, QMUL EECS, (2020-2022)
- PhD Student Representative, QMUL Robotics, (2019-2021)
- Web Chair, TAROS 2019 conference (2019)