

Ao Li

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EDUCATION

PhD in Engineering Mathematics, University of Bristol (09/2023 - Expected 2027)

- **Supervisors:** Dr Benjamin Ward-Cherrier and Dr Martin Pearson
- **Thesis title:** "Investigating biologically-inspired tactile exploration and integration of Spiking Neural Networks"
- **Funding:** Fully funded by the **China Scholarship Council-University of Bristol PhD Scholarship**

Master of Science in Robotics, University of Bristol & University of the West of England (09/2022 - 09/2023)

- **Grade:** Distinction
- **Dissertation:** "Human Strategies for Texture Exploration"

Bachelor of Science in Automation, Northeastern University (09/2018 - 06/2022)

- **Grade:** Upper second-class honours (GPA: 3.3/5)
- **Dissertation:** "Research on Obstacle Avoidance of Mobile Robot Based on SLAM"
- **Awards & Honours:** NEU Third Class Scholarship (2020-2022), Innovation and Entrepreneurship Scholarship

PUBLICATIONS

1. Li, A., Brayshaw, G., Lu, Y., & Ward-Cherrier, B. (2025, September). Velocity Modulation in Robotic Texture Exploration Based on Human Perceptual Dimensions. In *2025 IEEE-RAS 24th International Conference on Humanoid Robots (Humanoids)* (pp. 437-443). IEEE.
2. Xu, X. *, Li, A. *, & Ward-Cherrier, B. (2025, October). Exploratory movement strategies for texture discrimination with a neuromorphic tactile sensor. In *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 17869-17874). IEEE. (*: Equal Contribution)
3. Liu, T., Brayshaw, G., Li, A., Xu, X., & Ward-Cherrier, B. (2025). Neuromorphic touch for robotics—A review. *Neuromorphic Computing and Engineering*, 5(3), 032001.
4. S Shi, L., Li, A., & Ward-Cherrier, B. (2025). Optimal spiking brain compression: Improving one-shot post-training pruning and quantisation for spiking neural networks. *arXiv e-prints*, arXiv-2506. (Submitted to ICML 2026)

GRANTS & FUNDING

NCC Technology Pull Through Programme, National Composites Centre (04/2026 - 03/2027)

- **Amount:** £150k
- **Role:** Co-Investigator
- **Project:** Autonomous Real-Time Composite Quality Assurance via Neuromorphic Tactile Sensing
- **Objective:** Co-authored the successful grant proposal and am currently leading the hardware development to translate neuromorphic tactile research into industrial composite manufacturing.

FSE Early Career Researcher Partnering Fund, University of Bristol (05/2025 – 08/2025)

- **Amount:** £1000
- **Role:** Principal Investigator
- **Project:** Neuromorphic Tactile Framework for Real-Time Composite Material Surface Analysis

TEACHING & SUPERVISION

Highly committed to student-centred education, I have accumulated 300+ hours of extensive teaching, supervision, and assessment experience within the Faculty of Science and Engineering. My expertise spans Robotics, Data Science, and Mathematical Modelling, where I focus on bridging complex theoretical concepts with practical, hands-on applications. My teaching and supervision roles are categorised as follows:

- *Robotics & Artificial Intelligence:*

Artificial Intelligence for Robotics (SEMTM0016): Delivered teaching sessions and lecture presentations.

Robotics Science and Systems (SEMTM0042): Facilitated tutorial sessions and prepared teaching materials for projects.

Robot System (EMATM0054): Supervised practical lab sessions (demonstrating/floorwalking) and guided students through complex hardware/software troubleshooting.

- *Data Science & Mathematical Modelling:*

Mathematical and Data Modelling 3 (SEMT30005): Acted as a project supervisor/lecture assistant, providing extensive academic guidance and weekly supervision for undergraduate students.

MSc Data Science Projects (EMATM0047): Assessed and marked final Master's data science projects, providing constructive feedback and ensuring rigorous grading standards.

- *Interdisciplinary Studies:*

Technology, Innovation, Business and Society (EMATM0049): Conducted extensive marking and coursework assessment for a large student cohort.

Completed comprehensive training in Higher Education (HE) Teaching, Teaching Support Roles (TSR), and Engineering Faculty MSc Project Supervision & Workshop Management.

Supervised **3 MSc Robotics students**,

(Yanhui LU, Best Student Prize Class 2023, Lance SHI, Best Dissertation Project 2024, Yijun LIU)

EXPERIENCE

Faculty of Science and Engineering(University of Bristol), Communication Assistant [Part-time] (10/2025 - 06/2026)

- Directed, filmed, and edited promotional videos showcasing university facilities, research staff, and campus information, collaborating cross-functionally with various university departments and reporting to Kathryn Bastow.
- Managed the Faculty's official social media channels and facilitated pre-arrival Q&A sessions via WeChat groups, effectively supporting incoming international students.

University of Bristol, Teaching Assistant (09/2024 - Present)

- Facilitating lab sessions and tutorials for engineering and robotics courses, translating complex concepts into accessible practical assignments. (*Detailed course list available in the Teaching & Supervision section*)
- Assessing student coursework and technical reports against the University's marking rubrics, ensuring fair grading and providing actionable, constructive feedback to enhance student learning.
- Collaborating with course directors to develop teaching materials, monitor student progress, and manage day-to-day course administration.

Bristol Robotics Laboratory (Dexterous Group), Researcher (11/2022 - Present)

- Investigating human-inspired tactile exploration strategies to enhance robotic perception, under the supervision of Dr Benjamin Ward-Cherrier and Dr Martin Pearson.
- Developing hardware for a series of neuromorphic tactile sensors, utilising CAD software (Fusion360) to iteratively design and prototype complex sensor structures.
- Conducting extensive experimental data analysis using Spiking Neural Networks (SNNs) to decode complex tactile information collected from the developed sensors.

Northeastern University, Research Assistant (01/2022 - 06/2022)

- Performed virtual simulation of a mobile robot obstacle avoidance task under the supervision of Prof. Yuan Gao.
- Implemented, tested, and optimised advanced path planning algorithms (e.g. Hybrid A*), deploying on a Robot Operating System (ROS) environment.

Shenzhen Yuejiang Technology Co.,Ltd (Dobot), Technical Support Engineer (10/2021 - 01/2022)

- Updated technical documentation for the Dobot range of robotic arms, including Magician, M1, and M1 Pro.
- Executed real machine tests, systematically tracking and analysing test data to improve hardware system stability.
- Delivered simplified technical presentations and product demonstrations to effectively communicate complex robot demos, such as robotic palletising and packing, to non-technical audiences.

SKILLS AND INTERESTS

- **Technical Skills:** Python, C++, C, MATLAB, ROS.
- **Languages:** Mandarin Chinese (Native), English (Professional Working Proficiency), Mongolian, Japanese, and Korean (Elementary).
- **Leadership & Volunteering:** Vice President of Student Union & Class Monitor (Northeastern University); Student Ambassador at University of Bristol.
- **Media & Design:** Website Design, Video Editing, Adobe Creative Suite (Premiere Pro, After Effects, Photoshop).
- **Societies:** Member of Open Neuromorphic Society, IEEE RAS Technical Committee on Haptics, Dexterous Robotics Group (BRL), NEU Electronic Design Association.
- **Interests:** Basketball, Table Tennis, Hiking, Travelling.