

ASHKAN REZANEJAD

+44 7504511313 | ashkan.rezanejad@eng.ox.ac.uk | [Oxford Personal Webpage](#) | [Linkedin](#) | [Google Scholar](#)

CAREER AND EDUCATION PATH

University of Oxford, UK

January 2026 - Present

Postdoctoral Researcher

Member of RADlab — *Reconfigurable and Adaptive Designs Lab*.

Advisor: [Prof Antonio E Forte](#)

King's College London, UK

October 2022 - March 2026

PhD in Engineering — *Granular Mechanics, Soft Robotics, Molecular Dynamics, Finite Element Modelling*.

Advisor: [Prof Antonio E Forte](#), [Prof Chris Lorenz](#)

King's College London, UK

September 2019 - August 2022

Bachelor of Electronics Engineering (BEng) — *Thesis topic: Robotic handling of entangled materials* — Grade: *First class Honours (score of 80%)*

RESEARCH EXPERIENCE

Investigating adaptive robotic grippers, entangled granular metamaterials, and soft robotic systems

Conducted large-scale MD simulations in LAMMPS (1 year of HPC effort on a supercomputer) to establish programmable entanglement principles.

Developed laser-sealed thermoplastic actuator manufacturing method, enabling geometrically complex inflatable actuators, bistable cells, and morphable robotic structures.

Validated bending actuator behaviour through Abaqus FEM simulations and physical prototypes.

Fabricated soft devices and metamaterials using laser cutting, 3D printing, silicone casting, CNC machining.

Designed robotic gripping strategies combining entanglement physics with electromagnet-based actuation.

Peer Reviewed multiple papers from Advanced Portfolio Journals such as Advanced Functional Materials and IEEE conference papers such as RoboSoft.

TEACHING EXPERIENCE

Supervisory role, University of Oxford, UK (2026-present) Co-supervising research assistants in RADLab.

Teaching Assistant, King's College London, UK (2022-2025) Delivered tutorials and laboratory sessions in mechanics and engineering design. Supervised undergraduate and master's projects in robotics.

Instructor, Summer Programme: Introduction to Robotics, King's College London, UK (2025) Designed and delivered a course introducing robotics concepts and applications to undergraduate students, technicians and academics. Developed teaching materials, demonstrations, and hands-on activities to foster engagement and practical understanding.

Workshop Support, Automorph, King's College London, UK (2023) and Functionality through non-linearity, King's College London, UK (2025) Supported the organisation of an interdisciplinary workshop on morph-shaping and soft robotics. Assisted with logistics, laboratory preparation, and resource provision.

INVITED TALKS AND DEMONSTRATIONS

Speaker, Pint of Science, Oxford 2026. Programmable Materials Made from Interlocking Grains.

Presenter and live demonstration, RoboSoft 2026, Kanazawa, Japan. Programmable entanglement of granular mechanical metamaterials. Vacuum-Laser Fabrication of Programmable Soft Actuators.

Poster presenter, RoboSoft 2025, Lausanne, Switzerland. Ultra-Sensitive & Fully-Soft Pneumatic Valve for High-Speed Oscillatory Applications.

Poster presenter, KU Leuven 2024, networking with international soft robotics researchers.

Support with presentation, UK Robotic Manipulation Workshop, Oxford, 2024.

Robotic lab demonstrator, ICRA 2023, UK (IEEE International Conference on Robotics and Automation).

PUBLICATIONS



Figure 1: Awarded journal covers from Advanced Portfolio Journals

1. S. A. Pope, D. J. Roth, A. Bansal, M. Mousa, **A. Rezanejad**, ... (2026). The 2026 active metamaterials roadmap. *Journal of Physics D: Applied Physics*
2. **A. Rezanejad**, M. Mousa, Y. Wang, M. Adlerstein, J. Yao, A. E. Forte (2026). Vacuum-Laser Fabrication of Programmable Soft Actuators. *Advanced Science*
3. **A. Rezanejad**, M. Mousa, C. D. Lorenz, M. Howard, A. E. Forte (2025). Programmable Entanglement of Granular Mechanical Metamaterials. *Advanced Functional Materials* (Here we presented a robotic gripper that employs entanglement to pick clustered objects”).
4. M. Mousa, Y. Wang, **A. Rezanejad**, A. E. Forte (2025). Ultra-Sensitive & Fully-Soft Pneumatic Valve for High-Speed Oscillatory Applications. *IEEE 8th International Conference on Soft Robotics (RoboSoft)*
5. M. Mousa, **A. Rezanejad**, B. Gorissen, A. E. Forte (2024). Frequency-Controlled Fluidic Oscillators for Soft Robots. *Advanced Science*
6. **A. Rezanejad**, M. Mousa, M. Howard, A. E. Forte (2024). Complex picking via entanglement of granular mechanical metamaterials. *arXiv*.

PATENTS

1. Arcovio K., Yu Y., **Rezanejad A.**, Mousa M., Alhnan M. A., Al-Jamal K., Forte A. E. ORAL DELIVERY OF BIOLOGICS – STENTS DEVICES (being finalised for filing), King’s College London, UK Patent Application.
2. **Rezanejad A.**, Mousa M., Howard M., Forte A. E. A means to use tangling granular metamaterial to grip and manipulate materials and objects (**P44468GB**), King’s College London, UK Patent Application.