MAX YANG

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EDUCATION

PhD Engineering Mathematics, University of Bristol   Bristol, United Kingdom   2021 ▸ 2026 (Anticipated)

Department of Engineering Mathematics and Bristol Robotics Laboratory

EPSRC funded PhD, supervised by Prof. David Barton and Prof. Nathan Lepora.

Research Theme: Towards real-world dexterous manipulation skills with tactile sensing, physics-based simulators, and sim-to-real deep reinforcement learning.

MEng Aeronautical Engineering, Imperial College London   London, United Kingdom   Sep 2015 ▸ Jun 2019

Department of Aeronautics

Integrated Master's Degree. Obtained 1st Class Honours. Result: 77%

Thesis: "Optimal Control and its Role in Cancer Treatment" supervised by Dr. Thulasi Mylvaganam.

RESEARCH EXPERIENCE

Research Project: General In-hand Manipulation with Sim-to-Real Vision and Touch   Jun 2023 ▸ Nov 2025

- Studied general in-hand object manipulation with multi-fingered robot hand using vision and rich tactile feedback. Policy is trained in simulation and zero-shot transferred to the real world.
- Deployed on a UR5 robot arm equipped with the allegro hand and custom vision-based tactile sensors.

Robosoft Manipulation Competition: Robot Food Handling   Jan 2023 ▸ Apr 2023

- Developed vision-based robotic system to perform cluttered bin-picking, food pick-and-place and pouring tasks.

Research Project: Deep Reinforcement Learning for Tactile Pushing   Jan 2022 ▸ Dec 2022

- Explored the application of model-based and model-free deep reinforcement learning for long-horizon goal-conditioned object pushing from purely tactile feedback.

Master Thesis: Optimal Control for Cancer Treatment   Jan 2019 ▸ Jun 2019

- Implemented an optimal control algorithm to optimize the delivery of chemotherapy during cancer treatment.

PUBLICATIONS

[1] Cheruvary, M., Lepora, N.F., and **Yang, M.**, "Mass Estimation Using Supervised Learning with a Tactile Robotic Hand", *IEEE International Conference on Robotic Computing & Communication (RoboticsCC) 2025.*

[2] Lin, Y., Deng, B., Lu, C., **Yang, M.**, Psomopoulou, E., and Lepora, N.F., "NeuralTouch: Neural Descriptors for Precise Sim-to-Real Tactile Robot Control", *Under Submission 2025*

[3] Field, H., **Yang, M.**, Lin, Y., Psomopoulou, E., Barton, D.A., and Lepora, N.F., "Text2Touch: Tactile In-Hand Manipulation with LLM-Designed Reward Functions", *9th Conference on Robot Learning (CoRL) 2025.*

[4] Li, H., Lin, Y., Lu, C., **Yang, M.**, Psomopoulou, E., and Lepora, N.F., "Classification of Vision-Based Tactile Sensors: A Review", *IEEE Sensors Journal, 2025.*

[5] **Yang, M.**, Lu, C., Church, A., Lin, Y., Ford C., Li, H., Psomopoulou, E., Barton, D.A., and Lepora, N.F., "AnyRotate: Gravity-Invariant In-hand Object Rotation with Sim-to-Real Touch", *8th Conference on Robot Learning (CoRL) 2024.*

[6] Deng, B., Lin, Y., **Yang, M.**, and Lepora, N.F., "Coarse-to-Fine Robotic Pushing using Touch, Vision and Proprioception", *IEEE Robotics and Automation Letters (RA-L), 2024.*

[7] Comi, M., Tonioni, A., **Yang, M.**, Tremblay, J. Blukis, V., Lin, Y., Lepora, N.F., and Aitchison, L., "Snap-it, Tap-it, Splat-it: Tactile-Informed 3D Gaussian Splatting for Reconstructing Challenging Surfaces", *3DV 2024.*

[8] Lu, C., Kailuan, T., **Yang, M.**, Tianqi, Y., Haoran, L., and Lepora, N.F., "DexiTac: Soft Dexterous Tactile Gripping", *IEEE Transactions on Mechatronics 2024.*

[9] Lin, Y., Church, A., **Yang, M.**, Li, H., Lloyd, J., Zhang, D. and Lepora, N.F., "Bi-Touch: Bimanual Tactile Manipulation with Sim-to-Real Deep Reinforcement Learning", *IEEE Robotics and Automation Letters (RA-L) 2023.*

[10] **Yang, M.**, Lin, Y., Church, A., Lloyd, J., Zhang, D., Barton, D.A. and Lepora, N.F., "Sim-to-Real Model-Based and Model-Free Deep Reinforcement Learning for Tactile Pushing", *IEEE Robotics and Automation Letters (RA-L) 2023.*

[11] Fan, W., **Yang, M.**, Xing, Y., Lepora, N.F. and Zhang, D., "Tac-VGNN: A Voronoi Graph Neural Network for Pose-Based Tactile Servoing", *IEEE International Conference on Robotics and Automation (ICRA) 2023.*

WORK EXPERIENCE

Research Intern, Dexmate AI, United States (Onsite/Remote)   Jan 2025 ▸ Sep 2025

- Developed VR teleoperation software for a simulated digital twin of an in-house humanoid robot using Meta Quest.
- Implemented demo-augmented RL for bi-manual dexterous manipulation and tested the control pipeline on real factory tasks.

Teaching Assistant, University of Bristol, United Kingdom   Jan 2022 ▸ Jan 2025

- Co-supervised Msc research projects in physics-based simulation for dexterous manipulation, visuotactile manipulation, and summer projects on RL for tactile robotics.
- Prepared and showcased robot manipulation demonstrations for workshops and open days.

Research and Development Engineer, Sagentia Innovation, United Kingdom   Sep 2019 ▸ Sep 2021

- Implemented vision models (Mask R-CNN and U-Net) for agricultural navigation and vine detection.
- System identification and tuning of high-precision surgical motor.
- Expertise in market research, capturing requirements, technical planning and executing projects.

Research and Technology Summer Intern, Airbus, France   Jun 2018 ▸ Sep 2018

- Investigated the application of predictive maintenance for the latest A350 aircraft, examining the current data transmission pipeline and performing feasibility analysis.

CONFERENCE AND WORKSHOP PRESENTATIONS

- IROS 2025 Workshop on Tactile Sensing Toward Robot Dexterity and Intelligence
- The 6th UK Robot Manipulation Workshop 2025
- Conference on Robot Learning 2024
- CoRL 2024 Workshop on Learning Robot Fine and Dexterous Manipulation
- 2024 IEEE International Conference on Robotics and Automation (ICRA)
- ICRA 2024 Workshop on "Robot Embodiment through Visuo-Tactile Perception"
- The 5th UK Robot Manupulation Workshop 2024
- NeurIPS 2023 Workshop on "Touch Processing: a new Sensing Modality for AI"
- ICRA 2023 ViTac Workshop: Blending Virtual and Real Visuo-Tactile Perception
- The 4th UK Robot Manupulation Workshop 2023

PROFESSIONAL SERVICES

Reviewer of Autonomous Robots (2025), T-RO (2025, 2024), ICRA (2024), RA-L (2024), IROS (2023)

Awards and Honors

EPSRC Doctoral Training Partnership PhD Studentship 2021-2025
Fully funded UK Research Council PhD studentship supporting doctoral research.

Best Workshop Paper Award Finalist 2025
IROS 2025 Workshop on Tactile Sensing Toward Robot Dexterity and Intelligence

Best Workshop Poster Award 2023
NeurIPS 1st Touch Processing Workshop 2023

Imperial Aeronautics Scholar 2017
Awarded to students ranked in the top 10 of the Aeronautics cohort (98 students) for outstanding academic performance.

Ian Ross Scholarship 2016
A £2,500 merit-based scholarship awarded to high-achieving undergraduate students pursuing studies in STEM.

Teaching Activites

University of Bristol

2023/24 Spring	EMAT30007 Applied Statistics
2023/24 Spring	EMAT10006 Further Computing Programming
2023/24 Autumn	EMAT10007 Introduction to Computing Programming
2022/23 Spring	EMAT10006 Further Computing Programming
2022/23 Autumn	EMAT10007 Introduction to Computing Programming

Skills

Programming Language:	Python, C/C++, C#, MATLAB and Simulink
Software:	Pytorch, TensorFlow, Git, ROS, IsaacGym, Pybullet, Unity3D
Research Interest:	Reinforcement Learning, Optimal Control, Dexterous Manipulation, Tactile Sensing, Sim-to-Real Transfer
Language:	English, Mandarin