# Xing Ye

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## SUMMARY

Research engineer with 7 years of experience leading interdisciplinary research projects in mechanical engineering, robotics, advanced materials, and software engineering. Skilled at performing experimental research on emerging technologies, developing rapid prototyping plans, managing teams with diverse backgrounds, and communicating ideas with other engineers and stakeholders.

## EDUCATION

**Ph.D. in Mechanical Engineering**
Boston University, Boston, MA — Aug 2025
- Thesis: Liquid metal-enabled energy sources and actuators

**Master of Engineering in Instrument & Meter Engineering**
Tsinghua University, China — Jul 2021
- Thesis: Design and fabrication of pneumatic soft actuators for robotic and biomedical applications

**Bachelor of Medicine in Stomatology**
China Medical University, China — Jul 2018

## WORK EXPERIENCE

**Doctoral Researcher**
Additive Assembly Lab, Boston University, Boston, MA — Sep 2021 – Aug 2025
- Led a team of engineers to develop research plans and design experiments on interdisciplinary projects, including integrating sensors and actuators, data analysis and interpretation, system calibration and optimization, training and supervising junior researchers, overseeing lab equipment operations
- Performed mechanical structure design in CAD (SolidWorks) to develop a multi-material 3D printing strategy (direct ink writing) for shape morphing materials with pneumatic and fluidic actuators
- Devised algorithmic solutions in Python to generate g-code toolpath for deployable robotic structures with 90% reduction in storage volume
- Built pick-and-place robotic manipulators (Universal Robots) to automate the fabrication of 3D electric circuits
- Created iterative prototypes and designed testing strategies on novel materials such as stretchable soft batteries and self-powered devices, offering 70x increase in instantaneous power density than that of traditional energy harvesters
- Communicating research results in verbal and written forms, including publishing manuscripts in scientific journals, presenting seminars, and delivering presentations at major international conferences (2023 Materials Research Society Fall Meeting, 2024 Gordon Research Conference on Multifunctional Materials and Structures)

**Research Fellow**
Microelectromechanical Systems Lab, Tsinghua University, China — Sep 2018 – Jul 2021
- Developed laboratory research plans to create a vacuum-driven soft robotic torsional actuator that generates rotary motions, whose specific torque is higher than 80% of other methods reported in the literature
- Built numerical simulation models in finite element analysis software (ANSYS) to optimize design parameters for robotic manipulators
- Performed data analysis for images and signal processing in MATLAB, LabVIEW, and Python
- Designed closed-loop control systems for electromechanical sensors and implemented algorithms for automated material testing procedures
- Developed an intracranial pressure monitoring catheter prototype with integrated piezoresistive pressure sensors, reducing the cost by 85% compared to commercially available medical catheters
- Tested and evaluated the performance of a robotic heart simulation platform on in vitro models under various environments

**Graduate Teaching Fellow**
Boston University, Boston, MA — Sep 2022 – May 2023
- Prepared course and examination materials, graded assignments, and led discussion sessions on

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engineering courses such as Instrumentation and Python Programming for Engineers
- Instructed lab sessions for 70+ students and held one-on-one office hours for 80+ students
- Received an average of 4.6/5.0 (“excellent”) on student evaluations

**Reviewer**
*Scientific Reports* Dec 2023 – Aug 2024

- Evaluated the scientific quality, novelty, and robustness of submitted research manuscripts and recommended editorial decisions for *Scientific Reports*, the 5th most-cited academic journal in the world

## SKILLS

**Programming** | Java, Python, MATLAB, C++, Android development
**CAD & FEM** | SolidWorks, AutoCAD, ANSYS
**3D printing** | Direct ink writing (Aerotech), FDM (Bambu), SLA (Formlabs), DLP (BMF)
**Software** | Arduino, Raspberry Pi, LabVIEW, SQL, Blender, Photoshop, Illustrator, VideoStudio, Microsoft Office
**Machining** | Robotic manufacturing line (Universal), drill press, laser cutting, waterjet cutting, soldering, electronics
**Cleanroom equipment** | Magnetron sputtering, wire bonding, surface profiling, laser micrometer, microscope
**Rapid prototyping** | Mechanical design, fluidic pressure control, sensors, automation integration, material testing
**Language** | English, Mandarin

## PUBLICATIONS

- **Xing Ye**, Zhaoyi Zheng, Jörg G. Werner, J. William Boley. Mechanically rupturing liquid metal oxide induces electrochemical energy. *Advanced Functional Materials*, 34(31), 2309177, 2023.
- **Xing Ye**, Shidong Zhu, Xiang Qian, Min Zhang, Xiaohao Wang. V-shape Pneumatic Torsional Actuator: A Building Block for Soft Grasper and Manipulator, *Soft Robotics*, 9(3):562-76, 2021.
- Tao Jiang, Wenying Qiu, Zhaoyang Li, **Xing Ye**, Yuhan Liu, Yushi Li, Xiaohao Wang, Junwen Zhong, Xiang Qian, Liwei Lin. Programmable tactile feedback patterns for cognitive assistance by flexible electret actuators. *Advanced Functional Materials*, 32(4):2107985, 2022.

## PATENTS

- J. William Boley, **Xing Ye**. Liquid metal oxide composites as a source of electrochemical energy and uses thereof. U.S. Patent Application No. 63/711,347, pending.
- Xiang Qian, **Xing Ye**, Shidong Zhu, Min Zhang, Xiaohao Wang, Pneumatic torsional actuators and applications in robotic manipulation. Chinese Patent Application No. 202010966077.X, Patent No. CN112045702B, granted.
- Shidong Zhu, **Xing Ye**, Xiaohao Wang, Xiang Qian, Xinghui Li, A silicone elastomer-based robotic cardiac simulator. Chinese Patent Application No. 2020109660498, Patent No. CN112092409B, granted.