

Zechen (Zec) Xiong, Ph.D.

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EDUCATION

- 2018-2024 Ph.D., Mechanical Engineering, Columbia University
Dissertation: *Compliant and Bistable Mechanisms for Soft Robotics*
(Advisor: Hod Lipson)
- 2015-2018 M.S., Civil Engineering, Tsinghua University
Thesis: *Analysis for Heat Transfer and Multi-field Coupling of Energy Ge-
structures.*
- 2012-2015 B.S., Civil Engineering | B.A., Economics, Tsinghua University

RESEARCH & EXPERIENCE

- 2024-Pres **Postdoctoral Researcher, Texas State University**
Advisor: MD Raf E Ul Shougat | Jesus Jimenez | Karim Heinz Muci-Kuchler
- ♦ Leading research on compliant bistable fish robots (ServoFish, CarbonFish) for energy-efficient propulsion
 - ♦ Embedded programming (ESP32, C++, Python), load-cell sensing, CNC/3D printing prototyping
- 2018-2024 **Ph.D. Researcher, Columbia University**
Advisor: Hod Lipson | Xi Chen
- ♦ Invented novel bistable mechanisms for robotic propulsion and wearable devices
 - ♦ Patent holder, multiple publications in IROS, ICRA, and *Soft Matter*

SELECTED PUBLICATIONS

- Xiong, Zechen**, et al. "Designing Novel Carangiform Fish Robots with Undulating Hair Clip Mechanisms." *Npj Robotics* 4, no. 1 (2026): 7.
- Xiong, Zechen**, Zihan Guo, Li Yuan, Yufeng Su, Yitong Liu, and Hod Lipson. "Rapid Grasping of Fabric Using Bionic Soft Grippers with Elastic Instability." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 6449–55, 2023
- Xiong, Zechen**, Yufeng Su, and Hod Lipson. "Fast Untethered Soft Robotic Crawler with Elastic Instability." *IEEE International Conference on Robotics and Automation (ICRA)*, 2606–12, 2023.

Xiong, Zechen, Hang Xiao, and Xi Chen. “Fractal-Inspired Soft Deployable Structure: A Theoretical Study.” *Soft Matter* 17, no. 18, 4834–41, 2021

PATENT

Xiong, Zechen and Hod Lipson, “Novel Deformable Mechanism For Robotic Propulsion, Manipulation And Other Devices,” US20240286298A1, Aug. 29, 2024

TEACHING & MENTORING

- ♦ Physics Instructor, Columbia University Academic Success Program, 2022
- ♦ Teaching Assistant, Columbia University Environmental Engineering Dept., 2018-2021
- ♦ Mentored multiple Master’s and Undergraduate students in robotics projects

ACHIEVEMENTS

- ♦ Postdoctoral researcher in soft robotics (funded by PI start-up support)
- ♦ Developer of *ServoFish* and *CarbonFish* prototypes
- ♦ Patent holder; active reviewer for IEEE RA-L and other journals