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 Geo-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, Liqi Chen, and Hod Lipson. "Designing Novel Carangiform Fish Robots with Undulating Hair Clip Mechanisms", npj Robotics (accepted, 2025)

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