Enlin GU

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Education

- **University of Pennsylvania** — Philadelphia, PA, USA
  Master in Robotics & Master in Computer and Information Science; GPA: 3.90 — *Aug. 2023 – May. 2026(expected)*
- **Shanghai Jiao Tong University** — Shanghai, China
  Bachelor in Mechanical Engineering; GPA: 3.6/4.0 — *Sept. 2020 – Jun. 2024*

Honors and Rewards

National Undergraduate Mechanical Innovational Design Competition, 2022 — First Prize (Top 10)
International Genetically Engineered Machine Competition (iGEM), 2022 — Gold Medal
Toyota Boshoku Scholarship, 2021
Changjiang-Siyuan Kechuang Scholarship (Changjiang-Siyuan Scholarship for Scientific Innovation), 2022
Outstanding Bachelor's Graduate of SJTU, 2024

Publications

1. Yiming Liu, Lijun Han, Enlin Gu, Hesheng Wang, **"Learning a General Model: Folding Clothing with Topological Dynamics"**, *arXiv preprint.* [pdf]
- Developed a clothing folding workflow for multi-layered clothing like jackets using topological skeleton;
- Used **semantic augmentation** to analyze self-occlusion and decompose clothing structure;
- Used **keypoint detection** to generate a novel topological skeleton to represent the clothing state;
- Deployed an improved **Graph Neural Network** (GNN) to predict the deformation of clothing for control;

2. Yongzhou Long, Zhuang Zhang, Zhuowei Xu, Enlin Gu, Qiujie Lu, Hao Wang, Genliang Chen, **"Lightweight and Powerful Vacuum-Driven Gripper With Bioinspired Elastic Spine"**, *IEEE Robotics and Automation Letters, vol.8, no.12, pp.8136-8143, 2023.* [pdf]
- Developed a **durable, rapid, and powerful** vacuum-driven soft gripper inspired by elastic spine;
- The designed gripper has a maximum grasping force **over 50N** and endures **10000+ cycles**;
- Carrying out **quasi-static analysis** to predict the bending behavior with high model accuracy;

Selected Projects

- **Game-theoretic AI Coaching** — 08/2025 - Present
  Safe Autonomous Systems Lab, UPenn — *Instructor: Prof. Haimin Hu, Rahul Mangharam*
  - Developing a game-theory based AI Coaching policy for robot racing;
  - Trying a **sim-to-sim policy migration** from a gym to a simulator with physics and rendering;
- **Simple VIO-based Navigation System for Autonomous Quadrotor** — 03/2024 - 05/2024
  MEAM 6200 Advanced Robotics Course Project, UPenn — *Instructor: Prof. Ani Hsieh*
  - Developed a quadrotor able to pass narrow windows and find a way through a maze;
  - Implemented **Error State Kalman Filter** for local perception; Used **Dijkstra** and **A*** for local planning;
  - Implemented **RDP** and **Min-Jerk** for trajectory generation and **geometric PD controller** for control;
- **Bionic Underwater Robotic Fish** — 05/2022 - 06/2023
  National Undergraduate Mechanical Innovational Design Competition — *Instructor: Prof. Genliang Chen*
  - Developed a robot fish using **crank rocker** mechanism with **adjustable centerline** to swim & take turns;
  - Designed a compliant tail and modeled the motion using **principle axis decomposition** with MATLAB;
  - *First Prize & Good Creative Design Prize (Top 10 teams in China)*; Headline on SJTU homepage;
- **DL-ecGEM (Deep Learning - Enzyme Constraints GEM)** — 12/2021 - 10/2022
  International Genetically Engineered Machine Competition — *Instructor: Prof. Chaochun Wei*
  - Developed a generalized modeling online software for Acarbose production simulation and enzyme prediction;
  - Used optimization for reaction simulation; Learn missing K_{cat} values in the Actinobacteria protein database;
  - *Gold Prize* @ iGEM 2022; Headline on SJTU homepage; Project website here:[website]

Skills

- **Programming**: Python, MATLAB, C/C++, SQL, Ubuntu, Docker, Robot Operating System (ROS), Git
- **Hardware**: Arduino, ESP32; Solidworks; (CNC) Lathe, Milling; Basic Design & Fabrication Skills;