Ruihan Gao

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EDUCATION

University of Washington, *Seattle, WA, USA* **Sep.2025 - Future**
- B.S. in Applied Physics

Beijing Jiaotong University, *Beijing, China* **Sep.2023 - Apr.2025**
- B.Eng. in Mechatronic Engineering

RESEARCH & PROJECT

Institute for AI Industry Research, Tsinghua University **Research Assistant** **Jan.2025 - Apr.2025**
- **Project Blueprint:** Develop a wearable data acquisition glove and its isomorphic mechanically dexterous hand to efficiently capture hand motion data, and subsequently utilize the collected dataset to train and optimize the performance of the mechanically dexterous hand.
- **Personal Contribution:** Responsible for the design and iteration of the mechanical architecture for both the wearable device its isomorphic dexterous hand, conducting computational modeling and additive manufacturing (3D printing) of the constituent parts, and empirically evaluating their performance through Mujoco and real machine.
- **Future Prospect:** Conduct design optimization and performance enhancement, and disseminate the research findings through publication in international journals or presentation at international conferences. File for relevant patents.

Quadrupedal Transformable Tracked Robot **Team leader** **Sep.2024 - Dec.2024**
- **Project Blueprint:** The robot adopts a modular design, allowing for adjustments in leg length and track length to suit different usage scenarios. It achieves a combined wheel-leg mechanism through a metamorphic mechanism, featuring variable track angles and an 8-degree-of-freedom joint design.
- **Personal Contribution:** Responsible for the mechanical design of transformable structures, the development of automatic leveling algorithms based on IMU, and the development of gait algorithms for legged locomotion.

Multimodal Wheel-Track-Leg Hybrid Morphing Robot **Co-leader** **Feb.2024 - Aug.2024**
- **Project Blueprint:** Design a morphological wheel mechanism for adaptability; refine performance through experimental analysis. Target: ASME SMRDC **(**Student Mechanism and Robot Design Competition) participation.
- **Personal Contribution:** Proposed "O" and "∞" wheel-track configurations; drafted mechanisms in SolidWorks; simulated dynamics with Matlab Simulink; fabricated components via 3D printing; assembled the prototype; authored the research report.

Beijing Jiaotong University RTS Robotics Team **Team member** **Sep.2023 - Apr.2025**
- **Project Blueprint:** Develop an efficient, fully automated seedling collection and ball shooting robot for the 2024 Robocon series; design a fully automated ball handling and shooting robot for the 2025 Robocon series.
- **Personal Contributions:**

  ·For the 2024 season, as a mechanical team member, responsible for conceptualizing and validating competition strategies, constructing the robot, and refining the final competition model.

  ·For the 2025 season, as a management team member, responsible for planning design solutions and coordinating team tasks during the preparation period.

WORK EXPERIENCE

Galaxea Dynamics, *Beijing,CN* **Internship** **May.2025– Future**
- **Job Position**: Research & Development Engineer
- **Job Description**: I am responsible for developing a universal wearable exoskeleton manipulation system for manipulating dexterous hands of different configurations to collect data.
- **Job skill:** 3D design (solidworks,creo), simulation (mujoco,Isaac Sim), IL (Diffusion Policy)

2024 Global Sustainable Transport Forum **Volunteer** **Sep.24th2024 – Sep.26th2024**
- **Pre-forum**: Responsible for venue setup, arrangement of materials, and preparation of consumables.
- **During the forum**: Accompanied the Tajikistan diplomatic delegation throughout the event, providing translation and coordination services. Received unanimous praise from Tajik officials.

2024 China Conference on Automation and AI **Organizer** **Aug.20th2024 – Aug.21th2024**
- As a student member of the Chinese Association of Automation, I attended the conference in full and was responsible for promoting the event.
- During the conference, I actively engaged in academic discussions, gained insights into the latest developments in the field, and developed a deeper understanding of areas such as embodied intelligence and brain-computer interfaces.

OTHER INFORMATION

Honors & Awards
- BJTU Academic Progress Scholarship for the 2023-2024 Academic Year
- Second Prize in the National College Students Robot Competition (2024)
- First Prize in the Beijing Region of the North China Five Provinces Robot Competition (2024)
- Bronze Award in the First National College Students Career Planning Competition (Beijing Region) (2024)

- First Prize in the 14th National College Students E-commerce Innovation, Creativity, and Entrepreneurship Challenge (Campus Level) (2024)

Skills

- Demonstrated expertise in hands-on engineering practice and mechanical design, with proficiency in modeling software (Solidworks, Creo,AutoCAD) and simulation tools (Mujoco, Isaac Sim, Simulink).
- Proficiency in programming including Matlab, Python and C++.
- Strong command of English, coupled with robust capabilities in learning, technical writing, and collaborative teamwork