

Yuan Yao

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EDUCATION

Jilin University, China

Bachelor of Engineering, School of Mechanical and Aerospace Engineering

2021.9-now

Overall score: 90.6/100, rank within top 5%

Tohoku University, Japan

Exchange Student, Department of Robotics

2023.10-2024.8

Converted to 93.6/100, without rank and GPA

RESEARCH EXPERIENCES

Exploration of Film Separation Technique by Internal Laser Damage

2023.10-2024.8

Advised by Prof. Shuji Tanaka and Prof. Andrea Vergara

MEMS lab, Tohoku University

- A two-dimensional laser **stealth dicing** method for **low-stress separation of silicon-based thin films** is implemented, verifying its feasibility in the **transfer of flexible piezoelectric devices**. The output was presented at MNC2024 and expanded to the a journal paper.
- **Experienced in cleanroom workflows** and equipment operation, including: Mask design/fabrication, Photolithography, DRIE, PVD/CVD, Dicing, Laser systems, and OM/SEM/IR microscopy. [More](#)

Ultrasonic Vibration-assisted Scratch Testing Platform: Design and Study

2022.9-2024.4

Advised by Prof. Hu Huang

Huang lab, Jilin University

- Design and verify the thread-V groove composite structure to ensure effective vibration transmission; match the system's resonance frequency with the ultrasonic transducer working frequency through Abaqus **modal simulation**. Fills the gap for **instruments that can perform scratch testing under ultrasonic vibration**.
- Undergraduate Training Programs for Innovation, China. **National Excellent Conclusion**. Achieved an authorized patent and a published journal paper. [More](#)

ACADEMIC ACHIEVEMENT

- A conference extended paper: **Yao, Y.**, Vergara, A., Tang, Z., Tanaka, S. Feasibility Study of Layer Separation using 2D Patterned Internal Laser Damage in Silicon. *IEEJ Transactions on Electrical and Electronic Engineering*. <https://doi.org/10.1002/tee.70136>.
- **Oral presentation** on the 37th International Microprocesses and Nanotechnology Conference *MNC 2024*, Kyoto: *The Japan Society of Applied Physics*, Nov. 2024, 15D-2-3. [Slides](#)
- Huang, Y.; Wu, H.; **Yao, Y.**; Zhao, H.; Huang, H. An Ultrasonic Vibration Scratch Tester for Studying the Scratch Characteristics of Materials under Ultrasonic Vibration Contact Status. *Actuators*. <https://doi.org/10.3390/act13070262>.
- H. Huang, **Y. Yao**, Y. Huang, and H. Wu, "An ultrasonic vibration device for vibration-assisted scratch testing," *Chinese Patent*, Mar. 22, 2024. [CN 220649966U](#).

SKILLS

- **Languages:** Native Mandarin; Fluent English including IELTS: 7.0 and GRE: 320; Basic Japanese
- **Professional Software:** Proficient: Solidworks, AutoCAD; Intermediate: Catia, Ansys, Abaqus, Comsol, Origin
- **Programming Skills:** Python, Matlab, C#, $\text{\LaTeX}$

AWARDS AND HONORS

- **National second prize** - "Higher Education Cup" University Advanced Drawing & Modeling Innovation Contest
 - ◊ Advanced Engineering drawing; Proficient in CAD software; Teaching of the competition [More](#)
- **Provincial first prize** - China College Students Engineering Practice and Innovation Competition
 - ◊ Led the design and manufacture of a solar powered mini-vehicle [More](#)
- **Exchange student scholarship** - Japan Student Services Organization
- **First class scholarship; University Excellent student** - Jilin University
- **College Excellent student leader** - Jilin University