

# Yuan Yao

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## EDUCATION

### Jilin University, China

Bachelor of Engineering, School of Mechanical and Aerospace Engineering

2021.9-now

Overall score: 90.62/100, rank within top 5%

### Tohoku University, Japan

Exchange Student, Department of Robotics

2023.10-2024.8

Converted to 93.6/100, no 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 (expected).
- **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 paper submitted (conference extended): **Yao, Y.**, Vergara, A., Tang, Z. & Tanaka, S. Feasibility study of layer separation using 2D patterned internal laser damage in silicon. **IEEE Transactions on Electrical and Electronic Engineering**.
- **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](#) [Abstract](#)
- 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** 2024, 13, 262. <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#, Julia,  $\LaTeX$

## AWARDS AND HONORS

- **National second prize**- *National University Students' Advanced Drawing Technology and Product Information Modeling Innovation Competition*
  - ◊ Advanced Engineering drawing; Proficient in CAD software; Teaching of the competition [More](#) 2022.8
- **Provincial first prize** - *China College Students Engineering Practice and Innovation Competition*
  - ◊ Led the design and manufacture of a new energy mini-vehicle [More](#) 2023.11
- **Exchange student scholarship** - *Japan Student Services Organization* 2023.10-2024.8
- **First-class scholarship; Excellent student** - *Jilin University* 2023.11/ 2022.11
- **Excellent student leader** - *School of Mechanical and Aerospace Engineering, Jilin University* 2022.11