Yuan Yao

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Education

- **Jilin University, China** *2021.9-now*
  Bachelor of Engineering, School of mechanical and aerospace engineering Overall score: 90.62/100, rank within top 5%
- **Tohoku University, Japan** *2023.10-2024.8*
  Exchange student, Department of Robotics 8/9 Course grades: A/ AA

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 innovatively 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 Optical/SEM/Infrared 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**.
  - ◇ National Undergraduate Training Program for Innovation and Entrepreneurship(NCSIETP), **National Excellent Conclusion.** Derived 1 utility model patent and 1 journal paper. More

Academic achievement

- A paper under review (conference extended): **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*** Manuscript
- **Oral presentation** on *the 37th International Microprocesses and Nanotechnology Conference (**MNC 2024**)*, Kyoto: The Japan Society of Applied Physics, Nov. 2024, 15D-2-3. Slide Abstract
- Journal paper published: 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
- Utility Model Patent published: H. Huang, **Y. Yao**, Y. Huang, and H. Wu, "An ultrasonic vibration device for vibration-assisted scratch testing," Chinese Patent CN 220649966U, Mar. 22, 2024. Patent

Skills

- **Languages**: Native Mandarin; Fluent English including IELTs: 7.0 (6.5), CET4: 622, CET6: 559, GRE: 320; Basic Japanese
- **Professional Software**: Proficient:Solidworks, Autocad; Intermediate: Catia; Ansys, Abaqus, Recurdyn; Matlab Simulink, Origin
- **Basic Programming Skills**: Python, Matlab, C#, 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*