

Pijuan Yu

Phone: 321-339-7590

Email: pijuanyu@tamu.edu

[Github](#) | [Google Scholar](#)
[LinkedIn](#) | [Personal Website](#)

My research interests are haptics and robotics. Current research focuses on developing remote haptic communication frameworks to render tactile sensations between nurse and doctor in Virtual/Mixed Reality.

Education

- 08/2022 – Current **PhD in Mechanical Engineering**, *Texas A&M University*
GPA: 4.00/4.00
Advisor: Rebecca Friesen
- 08/2020 – 12/2021 **MS in Mechanical Engineering**, *Northwestern University*
GPA: 3.91/4.00
Advisor: Kevin Lynch, Matthew Elwin
Minor in Engineering Management
- 08/2018 – 05/2020 **BS in Mechanical Engineering**, *Florida Institute of Technology*
GPA: 3.51/4.00
Honor: Cum Laude
- 09/2016 – 06/2018 **BS in Energy and Power**, *Wuhan Institute of Technology*

Work Experience

- 08/2022 – Current **Graduate Research Assistant**, *Texas A&M University, College Station, TX*
- Developed a robotic visuo-haptic platform for remote medical palpation; achieved 75% tumor diagnostic accuracy in 18 participants, proving passive haptic feedback alone sufficed for size perception (*Published*).
 - Engineered a wearable VR haptic glove with Unity-integrated force feedback; 40-subject study showed 25% tactile acuity gain via mimicking motions (*Submitted*).
 - Developed low-cost, high-resolution soft haptic display toolkits (e.g., soft tactile displays) to democratize access to high-fidelity tactile interfaces (*Published*).
 - Render complex haptic sensory inputs from a novel wearable sensing glove into a custom high-fidelity soft tactile display (*in Progress*).
- 04/2022 – 08/2022 **Research Technician**, *The Feinberg School of Medicine, Chicago, IL*
- Designed MRI-compatible pneumatic tactile actuator (PIC32/custom PCB board) delivering 1.57 N – 11.60 N constant-force; fMRI validation with 6 subjects.
- 01/2022 – 03/2022 **ROS Specialist Internship**, *Quanticity, Chicago, IL*
- Led a 4-member team to deploy an autonomous ground vehicle with visual SLAM (Simultaneous Localization and Mapping) and ROS 2 Galactic navigation.
- 06/2021 – 12/2021 **Research Assistant**, *Center for robotics and biosystems, Evanston, IL*
- Integrated Intel T265 tracking cameras and realsense depth camera D435i across three omnidirectional robots, implementing AprilTag detection in ROS/OpenCV.
 - Developed a C++/OpenCV pipeline to calibrate dual fisheye lenses and generated 3D point clouds for disparity maps in ROS Noetic to enable real-time obstacle avoidance for mobile robots.
 - Implemented formation control and leader-follower algorithms for swarm control.

Academic Accomplishments

Journals (Peer-Reviewed)

- 08/2025 **Yu, P.**, Couch, G., Ferris, T. K., Hipwell, M. C., & Friesen, R. F. (2025). Haptic Acuity during Shared Grasp Experiences in Virtual Reality. [Manuscript submitted for publication to *IEEE Transactions on Haptics*].
Preprint doi: [10.36227/techrxiv.175561688.83754873/v1](https://doi.org/10.36227/techrxiv.175561688.83754873/v1).
- 03/2025 **Yu, P.**, Batteas, L. C., Ferris, T. K., Hipwell, M. C., Quek, F., & Friesen, R. F. (2025). Investigating passive presentation paradigms to approximate active haptic palpation. *IEEE Transactions on Haptics*, vol. 18, no. 1, pp. 208-219, January-March 2025, doi: [10.1109/TOH.2024.3523259](https://doi.org/10.1109/TOH.2024.3523259).
(Poster presentation in *2025 IEEE World Haptics Conference*)
- 03/2025 Harnett, M., Lacy, A. K., **Yu, P.**, & Friesen, R. F. (2025). Haptic interaction methods for freehand contour generation on a refreshable pin display. *Journal of Computing and Information Science in Engineering*, March 2025; 25(3), doi: [10.1115/1.4067417](https://doi.org/10.1115/1.4067417).

Conferences (Full Length, Peer-Reviewed)

- In progress **Yu, P.**, Kawazoe, A., Urquhart, A., Ferris, T., Hipwell, M. C., & Friesen, R. F. (2025). Towards High Fidelity Remote Palpation System. (In progress)
- 07/2025 **Yu, P.**, Urquhart, A., Kawazoe, A., Ferris, T., Hipwell, M. C., & Friesen, R. F. (2025). Soft haptic display toolkit: A low-cost, open-source approach to high-resolution tactile feedback. *2025 22nd International Conference on Ubiquitous Robots (UR)*. IEEE, College Station, TX, USA, 2025, pp. 59-66, doi: [10.1109/UR65550.2025.11078133](https://doi.org/10.1109/UR65550.2025.11078133).
- 07/2025 Kawazoe, A., **Yu, P.**, Ferris, T., Friesen, R. F., & Hipwell, M. C. (2025). The Impact of Palpation Motion on Capturing Lumps in Tissue with a Force Sensor. *2025 IEEE World Haptics Conference (WHC)*, Suwon, Korea, Republic of, 2025, pp. 236-242.
doi: [10.1109/WHC64065.2025.11123191](https://doi.org/10.1109/WHC64065.2025.11123191).
- 08/2025 Harnett, M.*, **Yu, P.***, & Friesen, R. F. (2025). Texture Design for Diverse Virtual Touch Sensations: Perceptual Breadth of Parameter-Driven Turing Patterns. *ASME 2025 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE)*. (Accepted). *Co-first authorship.*

Conference Contributions and Work-in-Progress Papers

- 04/2024 **Yu, P.**, & Friesen, R. F. (2024). Sharing grasping experiences in virtual reality. *The 2024 Texas Regional Robotics Symposium (TEROS)*, College Station, TX.
(Conference Poster)
- 04/2024 **Yu, P.**, & Friesen, R. F. (2024). Exploring shared grasping experiences in virtual reality. *IEEE Haptics Symposium 2024 (HAPTICS)*, Long Beach, LA. [Link](#).
(Hands-on demonstration and work-in-progress paper)
- 08/2023 **Yu, P.**, & Friesen, R. F. (2023). Rubber hand illusion induced by a 3-dimensional platform for passive touch in remote palpation. *ASME IDETC-CIE 2023*, Boston, MA.
(Extended abstract; oral presentation)
- 07/2023 Batteas, L., Volpi, D., **Yu, P.**, Kyei-Amponsah, K., Quek, F., Friesen, R. F., & Hipwell, M. C. (2023). Optimizing passive presentation strategies for improved interpretation of haptic replay experiences. *Proceedings of the 2023 IEEE World Haptics Conference (WHC)*, Delft, Netherlands. [Link](#). (work-in-progress paper)

Selected Projects

03/2021 – 06/2021

Dual UR5 Arms Assembly, *Northwestern University, Evanston, IL*

- Automated dual UR5 robotic arm assembly workflows using ROS (Robot Operating System) and MoveIt!, developing Lua/Python scripts to simulate collaborative tasks in CoppeliaSim.
- Engineered a dual-arm assembly platform to assemble four subcomponents into a primary unit, improving process efficiency by 20% compared to manual methods.

09/2019 – 04/2020

Electrical Formula SAE, *Florida Tech, Melbourne, FL*

- Designed and integrated a cooling system (radiator, fan shroud, electric fan, water pump) using Simulink simulations, reducing motor overheating risk by 35% during endurance testing.
- Developed a 3D-printed SolidWorks motor shield prototype to protect critical components from environmental debris, extending hardware lifespan by 50% in harsh conditions.

Selected Activities

07/2025

Student Ambassador in Ubiquitous Robots Conference, *College Station, TX*

- Ensured operational readiness of audiovisual systems for all technical sessions, performing equipment checks and providing real-time troubleshooting to prevent delays.
- Provided on-stage assistance to international speakers and academic presenters, facilitating seamless presentations and managing presentation materials.

02/2024

Houston Elementary S.T.E.M. Night, *Bryan, TX*

- Led demonstrations of the WEART TouchDiver Haptic Glove to elementary students and their families, enhancing STEM education.
- Highlighted the glove's touch simulation capabilities, promoting engagement and interactive learning in STEM.

Skills/Language

Coding: Python | C/C++ | C# | R | MATLAB

Robotics: ROS1/ROS2 | Socket/Serial Communication | OpenCV | SLAM | Navigation | MoveIt! | Gazebo | CoppeliaSim | Git | Unity | Universal Windows Platform (UWP)

Mechatronics: Raspberry Pi | Arduino | PIC32 microcontroller | PCB design | PWM | NI Data Acquisition (DAQ) Systems | DC/Servo/Stepper motors | Pneumatic system

Mechanical: ANSYS | Finite Element Analysis (FEA) | Solidworks | OnShape | Fusion 360 | MATLAB Simulink | 3D Printers

Language: Proficient in Mandarin | Fluent in English

Honors/Memberships

NSF Funded Graduate Research Fellowship - Texas A&M University, 2022 - Present
Graduate Student Travel Award - J. Mike Walker '66 Department of Mechanical Engineering in Texas A&M University

Cum Laude - College of Engineering in Florida Tech

Student Member - American Society of Mechanical Engineers (ASME)

Student Member - Institute of Electrical and Electronics Engineers (IEEE)