

Wanli Qian

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Website | LinkedIn | GitHub | Google Scholar

Seeking Summer 2027 Research Internship
Robotics | Tactile Perception | Teleoperation

Research Profile

CS Ph.D. researcher studying how robots acquire and represent physical properties through touch, multimodal sensing, and action. Builds tactile-feedback teleoperation systems and language-conditioned haptic models. Research spans active perception, manipulation, and human-robot interaction; recipient of a 2026 IEEE Haptics Symposium paper award.

Education

University of Southern California Ph.D. in Computer Science	2024–Present Expected graduation: Fall 2028
University of Chicago Predoctoral M.S. in Computer Science	2022–2024
Georgia Institute of Technology B.S. in Computer Science	2018–2022

Research Experience

USC HaRVI Lab Ph.D. Researcher	2024–Present
• Build bilateral teleoperation systems with tactile feedback for remote surface perception, manipulation, and data collection. • Study active haptic perception through exploratory policies that adapt robot actions to reduce uncertainty about object and surface properties. • Develop language-conditioned generative models for tactile and vibration signals using force, acceleration, and vision-based tactile data. • Curate multimodal haptic datasets spanning 200+ materials, combining tapping, sliding, audio, and affective descriptors. • Integrate VR/AR and language-based interaction into haptic and texture authoring systems.	
University of Chicago AxLab Predoctoral Researcher	2022–2024
• Led the development of SHAPE-IT into an interactive system for conversational 3D shape generation and real-time reconfiguration of physical shape displays. • Developed adaptive LLM-based agents that modify shape-display control scripts in response to ongoing interaction.	
Georgia Tech Borg Lab Lab Assistant	2021–2022
• Developed motion planning and trajectory optimization methods for robotic drawing and writing with cable robots and articulated manipulators. • Integrated motion capture with robot control to analyze and reproduce human artistic trajectories; explored polynomial stroke models and deformable virtual brush dynamics.	

Industry Experience

Kolmostar Software Engineer Intern	2022
• Built urban-geometry simulation pipelines to quantify wireless-signal shadowing, with visualization tools supporting sensing-system deployment.	
Megvii Robotics Software Solution Intern	2019
• Implemented and benchmarked probabilistic and graph-based motion planners for high-DOF industrial manipulators; visualized efficiency, robustness, and convergence across task geometries.	

Selected Publications

Language-Guided Multimodal Texture Authoring via Generative Models.

Wanli Qian, Michael Gu, Aiden Chang, Shihan Lu, Heather Culbertson.

IEEE Haptics Symposium, 2026. [Paper](#) | [Video](#)

Distinguished Technical Long Paper Award

SHAPE-IT: Exploring Text-to-Shape-Display for Generative Shape-Changing Behaviors with LLMs.

Wanli Qian*, Chenfeng Gao*, Anup Sathya, Ryo Suzuki, Ken Nakagaki.

ACM UIST, 2024. *Equal contribution. [Paper](#) | [Video](#)

Shape n'Swarm: Hands-on, Shape-aware Generative Authoring with Swarm UI and LLMs.

Matthew Jeung, Anup Sathya, Wanli Qian, Steven Arellano, Luke Jimenez, Ken Nakagaki.

ACM UIST, 2025. [Paper](#) | [Video](#)

GTGraffiti: Spray Painting Graffiti Art from Human Painting Motions with a Cable Driven Parallel Robot.

Gerry Chen, Sereym Baek, JD Florez, Wanli Qian, Sang-won Leigh, Seth Hutchinson, Frank Dellaert.

IEEE ICRA, 2022. [Paper](#) | [Video](#)

Weakly Supervised Part-Based Method for Combined Object Detection in Remote Sensing Imagery.

Wanli Qian, Zhe Yan, Zhe Zhu, Wei Yin.

IEEE JSTARS, vol. 15, pp. 5024–5036, 2022. [Paper](#)

Manuscripts Under Review

Feeling What the Gripper Feels: Haptic Rendering of a Grasped Object from Tactile Video in Teleoperation.

Wanli Qian et al.

Submitted to IEEE Robotics and Automation Letters (RA-L); under review.

TouchTwin: Human-in-the-Loop Haptic Texturing of 3D-Scanned Tabletop Scenes with Vision–Language Recognition and Language-Guided Generation.

Wanli Qian et al.

Submitted to ACM CHI 2027; under review.

Teaching

CSCI 445: Introduction to Robotics | Teaching Assistant, USC

2025

CMSC 25040: Introduction to Computer Vision | Teaching Assistant, UChicago

2023

Service & Outreach

Reviewing: CHI, UIST, IEEE Haptics Symposium, IEEE Transactions on Haptics.

Mentorship: USC CURVE (Spring/Fall 2025, Spring/Fall 2026); USC Viterbi SURE (Summer 2025); USC REU (Summer 2026).

Outreach: Peace4Kids robotics workshop organizer/mentor; RSS conference volunteer.