

Wenqian Zhang

University of California, Riverside | Computer Engineering

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EDUCATION

University of California, Riverside

Riverside, CA

Bachelor of Science in Computer Engineering

Sep. 2023 – June 2027 Expected

- Relevant Coursework: Data Structures & Algorithms, Embedded Systems, Operating Systems, Machine Learning, Computer Vision, Linear Algebra

RESEARCH INTERESTS

My research focuses on embodied AI and robot learning, with an emphasis on multimodal perception, imitation learning, and reliable decision making under distribution shift. I am particularly interested in learning from real-world interaction and developing intelligent agents that integrate visual, audio, and contextual information for robust behavior understanding and physical manipulation.

PUBLICATIONS

Wenqian Zhang, Zehao Wang. *Context as Prior: Bayesian-Inspired Intent Inference for Non-Speaking Agents with a Household Cat Testbed*. Accepted as a poster paper at the **CVPR 2026 CV4Animals Workshop**. [arXiv:2604.27445](https://arxiv.org/abs/2604.27445)

MANUSCRIPTS UNDER REVIEW

Zhixu Li, Keqian Tang, Litian Gong, Jingyu Yao, **Wenqian Zhang**, Tianze Xu, Zehao Wang, Yuping Wang, Junge Zhang, Jiachen Li. *LIBERO-PerM: Benchmarking Personalized Robotic Manipulation*. Submitted to the **NeurIPS 2026 Evaluations & Datasets Track**.

AWARDS & GRANTS

UCR Chancellor's Research Fellowship

2026

- Selected for undergraduate research fellowship supporting independent research in multimodal behavior discovery for non-speaking agents.

UCR Undergraduate Education Mini-Grant

2026

- Received travel support to present accepted research at the CVPR 2026 CV4Animals Workshop.

RESEARCH & ENGINEERING EXPERIENCE

Robotics Engineering Intern

Jul. 2026 – Present

Stealth Robotics Startup

San Francisco, CA

- Build and integrate real-world robot learning stations for bimanual teleoperation, demonstration collection, and policy evaluation using YAM Pro arms, RGB-D cameras, ROS 2, and LeRobot-compatible interfaces.
- Implemented and validated robot-control and data-collection interfaces across multiple hardware platforms, including leader-follower teleoperation, camera mounting, calibration, and full-system bring-up.
- Evaluated imitation-learning and vision-language-action policies on Push-T, pick-and-place, and towel-folding tasks, diagnosing failures caused by occlusion, control-frequency mismatch, gripper oscillation, camera shift, and limited demonstration coverage.
- Prepared an end-to-end towel-folding station for demonstration collection and checkpoint evaluation, contributing robot-interface and infrastructure updates through pull requests.

Undergraduate Research Assistant

Jan. 2026 – Present

Trustworthy Autonomous Systems Laboratory, UC Riverside

Riverside, CA

- Conduct research under Prof. Jiachen Li on embodied AI, reliable robot learning, multimodal behavior understanding, and trustworthy autonomous systems.
- Led the development of **CatSignal**, a first-author project on multimodal intent inference for non-speaking agents that was accepted at the CVPR 2026 CV4Animals Workshop.
- Contributed to real-world robot learning projects involving Franka Research 3 manipulation, vision-language-action policy deployment, teleoperation, and personalized robotic manipulation benchmarks.

Undergraduate Research Fellow

May 2026 – Present

R-LIAR Group, UC Riverside

Riverside, CA

- Conduct fellowship research under Prof. Christian Shelton on probabilistic multimodal learning, behavior understanding, and reliable decision making for non-speaking agents.
- Developing a scalable supervised and semi-supervised extension of CatSignal using annotated online videos, label-consistency analysis, and comparisons with zero-shot vision-language models.
- Investigating shortcut learning from environmental context and methods for separating contextual priors from observable behavioral evidence.

Research Assistant

Sep. 2024 – Jan. 2025

Robotic and Medical Systems Lab, UC Riverside

Riverside, CA

- Processed experimental trajectory data for the SLIT neurosurgical robotics system using MATLAB.
- Applied **RANSAC** and polynomial fitting for outlier removal, trajectory estimation, and downstream safety analysis in robotic procedures.

SELECTED RESEARCH PROJECTS

CatSignal: Multimodal Intent Inference for Non-Speaking Agents | *PyTorch, DeepLabCut, Audio* 2026

- Constructed a real-world household-cat intent-inference dataset containing 112 three-second clips derived from 44 home videos, with pose-validity filtering and synchronized multimodal annotations.
- Extracted pose-derived motion features with DeepLabCut and combined them with audio signals and spatial context for three-class intent classification.
- Designed a Bayesian-inspired **Product-of-Experts** framework that models spatial context as a prior and pose and audio signals as behavioral evidence.
- Achieved **77.72% classification accuracy**, compared with 38.69% for vision-only inference, 50.67% for audio-only inference, 60.87% for context-only inference, and 71.83% for feature concatenation.
- Analyzed contextual shortcut learning and demonstrated that multimodal behavioral evidence can correct incorrect context-driven predictions in ambiguous cases.

Franka Research 3 Robot Learning and Teleoperation Infrastructure | *Franka, Polymetis, DROID, OpenPI* 2026

- Built and debugged a real-world Franka Research 3 manipulation stack with a Robotiq 2F-85 gripper, ZED cameras, Linux configuration, robot networking, and camera calibration.
- Executed real-robot evaluations on object picking, placement, sequential manipulation, and object-to-container transfer tasks, achieving 10/10 success on individual bread-to-plate and pen-to-plate tasks and 8/10 on sequential execution.
- Evaluated OpenPI and DROID-style vision-language-action policies and identified deployment failures involving controller mismatch, camera-view distribution shift, release timing, gripper behavior, and end-effector offsets.
- Developed and documented a GELLO-based teleoperation workflow for expert demonstration collection and future imitation-learning experiments.

CONFERENCE PRESENTATIONS

Poster Presentation, CVPR 2026 CV4Animals Workshop. *Context as Prior: Bayesian-Inspired Intent Inference for Non-Speaking Agents with a Household Cat Testbed.*

TECHNICAL SKILLS

Programming: Python, C++, MATLAB, SQL, JavaScript, HTML/CSS

Machine Learning / AI: PyTorch, scikit-learn, computer vision, multimodal learning, probabilistic modeling, uncertainty-aware learning, representation learning, clustering

Robotics / Autonomous Systems: Franka Research 3, Robotiq gripper, ZED cameras, Polymetis, DROID, OpenPI, ROS/ROS 2, imitation learning, teleoperation, robot calibration, autonomous driving

Data / Scientific Computing: NumPy, Pandas, OpenCV, DeepLabCut, signal processing, trajectory analysis, dataset construction, experiment evaluation

Developer Tools: Git, GitHub, Linux, Docker, VS Code, LaTeX, SolidWorks, React, Tailwind CSS