Jing (Daisy) Dai

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Education

Shanghai Jiao Tong University	Shanghai
Master in Mechanical Engineering | Advisor: Weixin Yan	Sep. 2023 - Jun. 2026 (Expected)
GPA: 3.6 / 4.0	
Hunan University	Changsha
Bachelor in Mechanical Design, Manufacturing and Automation	Sep. 2019 - Jun. 2023
GPA: 3.66 / 4.0 (ranking: 15/248, top 6%)	

Research Statement

My research focuses on robot learning with concrete hardware implementations, bridging mechatronics and AI to enable dexterous manipulation. With experience spanning from embedded systems to RL algorithms, I bring a unique hardware-software co-design perspective essential for advancing embodied intelligence. I thrive in cross-disciplinary teams, having collaborated with engineers, researchers, and designers across academia and industry.

Publications

[1] Jing Dai, Jianbo Yuan, Yiwen Lu, Haohua Zhu, Sheng Yi, and Weixin Yan. "IntuitCap: A 60-DOF Upper-body Motion Capture System for Dexterous Robot Manipulation". Accepted by 8th The International Conference on Robotics, Control and Automation Engineering (RCAE), 2025.

[2] Jing Dai, Qianshu Wang, Shurui Zhang, Jianbo Yuan, Weixin Yan, and Yiwen Lu. "Learning Task-Centric Retargeting for Generalizable Dexterous Manipulation". In preparation for Robotics: Science and Systems (RSS), 2026.

[3] Xinyue Xu, Jing Dai, Jieqiang Sun, Lanjie Ma, Ke Sun, Jianbo Yuan, Weixin Yan, and Yiwen Lu. "DexCanvas: Bridging Human Demonstrations and Robot Learning for Dexterous Manipulation". In preparation for International Conference on Learning Representations (ICLR), 2026.

[4] Yuchen Jia, Suzhen Wu, Gang Wang, Jing Dai, Jingyuan Gao, Rui Lei, and Aonan Li. "A Bionic Peacock", Invention Patent, ZL116423533A, 2023-07-14. [Link]

Research Projects

Task-Centric Reinforcement Learning for High-DOF Dexterous Hands	Shanghai
Research Intern | DexRobot Inc.	Feb. 2025 – Present

Advancing dexterous manipulation through task-centric RL applied to high-DOF robotic hands. Leveraging real-to-sim human demonstrations and large-scale datasets for robust skill transfer.

- RL-based dexterous retargeting algorithm (proposed; first author): Pioneered a novel retargeting method to map human demonstrations to robot morphology while preserving task semantics, achieving 30% increase in real-world teleoperation efficiency compared to DexPilot baseline
- Large-scale real+synthetic manipulation dataset: Contributed to RL methodology development for physical plausibility recovery of human demonstrations; building dataset of 1M+ cross-embodiment demonstrations for classified grasping tasks on dexterous hands of various morphology
- Simulation setup: Constructed simulation scenes in MuJoCo and Isaac Gym; deployed benchmark datasets such as ARCTIC to evaluate manipulation accuracy and generalization
- Policy deployment: Implemented hardware and control integration for the 19-DOF DexHand 021, enabling adaptive in-hand manipulation under dynamic contact conditions

Upper Limb 60-DOF Data Acquisition and Digital Twin System

Engineering Intern | DexRobot Inc.

Shanghai

Sep. 2024 – Mar. 2025

Engineered a 60-DOF upper-limb capture system that enables real-time teleoperation for high-fidelity human demonstration capture

- Mechanical Design: Designed lightweight exoskeleton using 3D-printed nylon structures, integrating magnetic encoders for joint angle sensing and smart gloves with tactile feedback for hand motion capture
- Embedded Systems: Implemented Socket and CANFD bus communication for low-latency peripheral device control and data streaming, achieving 10ms end-to-end latency
- Robot Kinematics & Control: Implemented kinematic modeling and mapping algorithms to reconstruct operator motion. Created Unity3D-based digital twin environment for real-time teleoperation of dual-arm JAKA robots and DexHand 021 systems

Bionic Robotic Peacock

National First Prize, Mechanical Innovation Design Competition | Advisor: Gang Wang

Changsha

May 2022 – Aug. 2022

Engineered a bionic robotic peacock with embedded control, multi-axis actuation, and voice interaction for educational exhibition

- Architected embedded control system based on dual STM32 microcontrollers, programmed in embedded C using Keil IDE, with modular architecture supporting coordinated actuation of 11 motors
- Programmed complex motion behaviors (tail spreading, wing retracting, dancing, walking) through heterogeneous motor control: servo motors for tail and legs, brushless DC motors for neck and wings
- Integrated real-time voice control via LU-ASR01 speech recognition module; conducted three design iterations to optimize motion smoothness and structural reliability

Teaching Experience

Teaching Assistant | Introduction to Robotics

Shanghai

Shanghai Jiao Tong University

Spring 2025

- Taught kinematics, dynamics, and control systems through interactive lab sessions
- Mentored 30+ students on robotic system design projects bridging theory and implementation

Skills

Programming	Matlab, Python, C, C++, Qt
Professional Software	SOLIDWORKS, UG NX, Simulink
Robotics Technology	ROS, Simulators (MuJoCo, Isaac Gym, Unity), Deep Learning (PyTorch)
Drawing & Typesetting	MS Office, Photoshop, LaTeX, Markdown
Languages	Chinese (Native), English (IELTS: 7)

Selected Honors & Activities

2020	National Scholarship (Top 0.2% nationwide)	Changsha
2022	National First Prize, 10th National College Mechanical Innovation Design Competition	Shenzhen
2025	Trane Technologies Future Star Women Engineers Scholarship	Shanghai
2023	Outstanding Graduate of Hunan University	Changsha
2022	Honorable Mention Prize, Mathematical Contest in Modeling (MCM)	USA

Leadership & Service: New Media Center Director, SJTU-ME Student Union (2023-2025) | Peer Mentor, Hunan University (2021-2023)