Jing Dai

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Education

Shanghai Jiao Tong University *Shanghai*
M. E. in Mechanical Engineering | Advisor: Weinxin Yan – *Associate Professor of ME, SJTU* Sep. 2023 - Jun. 2026 (Expected)
GPA: 3.6 / 4.0

Hunan University *Changsha*
B. E. in Mechanical Design, Manufacturing and Automation Sep. 2019 - Jun. 2023
GPA: 3.66 / 4.0 (ranking: 15 / 248)

Publications

[1] **Jing Dai, Jianbo Yuan, Yiwen Lu**, et al. "IntuitCap: A 60-DOF Upper-body Motion Capture System for Dexterous Robot Manipulation". (Under review) [arXiv]

[2] "A Bionic Peacock", *Invention Patent*, ZL116423533A, 2023-07-14. (Co-Inventor) [Link]

Research Projects

Upper Limb 60-DOF Data Acquisition and Digital Twin System *Shanghai*
Algorithm Engineer | Advisor: Weixin Yan, Jianbo Yuan | Zhejiang DexRobot Technology Co., Ltd. Sep. 2024 – Mar. 2025

Aim to develop a 60-DOF upper-limb capture system that enables real-time teleoperation and supports imitation learning, incorporating force feedback to facilitate delicate in-hand manipulation.

- **Structure & Hardware:** Built a lightweight exoskeleton using 3D-printed nylon structures, integrating magnetic encoders for joint angle sensing and smart gloves for hand joint capture and tactile feedback
- **Communication integration:** Integrated Socket and CANFD bus communication for low-latency peripheral device control and data streaming
- **Software development:** Implemented kinematic modeling and mapping algorithms to reconstruct operator motion and developed a Unity3D-based digital twin environment and real-time teleoperation of dual-arm JAKA Mini robots and anthropomorphic hands with synchronized motion and force feedback

Dexterous Manipulation and In-Hand Operation with 021 Dex-Hand *Shanghai / Remote*
Research Intern | Zhejiang DexRobot Technology Co., Ltd. Feb. 2025 – Present

Aim to develop robust control strategies for anthropomorphic hands to achieve human-level dexterity in object manipulation and support learning-based teleoperation frameworks

- Reviewed major manipulation methodologies, including model-based and learning-based techniques, to inform algorithm design and system benchmarking
- Built simulation environments in MuJoCo and Isaac Gym, and deployed benchmark datasets such as ARCTIC to evaluate manipulation accuracy and generalization
- Implemented hardware and control integration for the custom-built five-fingered 021 Dex-Hand, enabling adaptive in-hand manipulation under dynamic contact conditions

A Bionic Peacock *Changsha*
National First Prize in The Mechanical Innovation Design Competition | Advisor: Gang Wang, *Professor of ME, HNU* May 2022 – Aug. 2022

Aim to develop a bionic robotic peacock with embedded control, multi-axis actuation, and voice interaction, replicating real-life structure and behavior for educational exhibition in museums and science centers.

- Developed an embedded robotic control system based on dual STM32 microcontrollers, programmed in C++ using Keil IDE, with a modular architecture supporting coordinated actuation.
- Implemented complex motion behaviors including tail spreading/closing, wing spreading/retracting, head lowering/raising, dancing, and walking through heterogeneous motor control:
  - Servo motor for tail articulation
  - Brushless DC motors for neck and wing mechanisms
  - Worm gear reduction motors for leg movement and walking stability
- Integrated real-time voice control via the LU-ASR01 speech recognition module, enabling natural-language motion commands and hands-free interaction, and conducted three full design iterations to optimize motion smoothness and structural reliability.

Technical Skills

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

Awards and Honors

2025	**Scholarship**: "Trane Technologies Future Star Women Engineers Scholarship"	*Shanghai*
2024	**Honorary Title**: "Outstanding student"	*Shanghai*
2023	**Honorary Title**: "Outstanding Graduate of Hunan University"	*Changsha*
2023	**Scholarship**: Prize of the " Qiushi "	*Changsha*
2022	**Contest**: National First Prize in the 10th National College Mechanical Innovation Design Competition	*Shenzhen*
2022	**Honorary Title**: "Excellent Student Leader"	*Changsha*
2022	**Scholarship**: " National Inspirational Scholarship "	*Changsha*
2021	**Contest**: H Prize in "2022 Mathematical Contest in Modeling" (MCM)	*Changsha*
2021	**Awards**: "Tellhow Star" Top Ten Scholarships	*Changsha*
2020	**Scholarship**: "National Scholarship"	*Changsha*
2020	**Scholarship**: Third Prize of Hunan University President and Secretary's Book Recommendation Award	*Changsha*
2019	**Scholarship**: "Scholarship donated by Mechanical Seniors in Grade 2005"	*Changsha*

Campus Experience

School of Mechanical Engineering Student Union · *Shanghai*

New Media Center Director · Oct. 2023 - Jun. 2025

- Orientation and Technical Training for a Ten-Person Team
- Contributed and edited nearly 20 articles for the school's promotional platform

Grassroots Employment Center · *Shanghai*

Theoretical Study Member · Oct. 2023 - Aug. 2025

- Organized bi-weekly reading discussion sessions focused on government organizational structures and grassroots governance
- Conducted interviews with graduates to gather perspectives on their entry-level work experiences

Hunan University Library · *Changsha*

Deputy Director Assistant · Oct. 2019 - Jun. 2022

- Organized the Winter Reading Challenge, attracting over 100 participants campus-wide
- Managed an online group chat with over 500 members, sharing real-time library updates and floor information

Hunan University · *Changsha*

Peer Mentor · Jul. 2021 - Jun. 2023

- Hosted the "Top 10 Class Collectives" selection and defense event
- Developed customized learning resources aligned with students' academic levels, including social media series on "Research Experience Sharing" and "Winter Vacation Study Guidance"

Self Evaluation

I bring exceptional reliability and collaborative spirit to multidisciplinary robotics teams. My consistent performance and accountability make me a valued team member across mechanical, electrical, and computational domains. This collaborative approach enables effective integration of diverse expertise essential for advancing complex robotics research.

I combine rapid technical learning with pragmatic implementation in robotics work. As a Teaching Assistant for undergraduate robotics courses in 2025, I demonstrated my ability to simplify complex concepts while encouraging students to develop practical solutions. This experience reinforced my own understanding while revealing my talent for knowledge sharing. My approach balances theoretical rigor with functional applications—enabling me to contribute meaningfully to robotics research while helping others develop their technical capabilities.

Beyond academics, I enjoy reading, film, and running. Literature expands my perspectives, cinema provides artistic appreciation, and running maintains my physical well-being—collectively reflecting my commitment to a balanced lifestyle.