

Daoyuan Jin

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Education

Cornell University

Sept 2023 – Present

Ph.D. in Electrical and Computer Engineering

- Research focus: embodied and agentic AI systems integrating reasoning and action for scientific discovery

Zhejiang University

Sept 2019 – June 2023

B.E. in Agriculture Engineering, GPA: 3.93/4.0 (TOP1%)

Professional Skills

Languages & Platforms: Python, C/C++, Rust, AutoGen, Isaac Sim, LangChain, PyTorch, ROS

Tools & Frameworks: Arduino, AutoCAD, Auto-sklearn, Fusion 360, CloudCompare, Docker, Gazebo, Git, Habitat, LabVIEW, MATLAB, OpenCV, RAG, Raspberry Pi, Simulink, SLAM/navigation, SolidWorks

Selected Research Experience

AI-powered Multi-Agent System for Autonomous Scientific Discovery

Ithaca, NY

Graduate research @ Cornell University

Jun 2025 – Sept 2025

- Developed a five-agent system integrating domain science, data analysis, ML modeling, visualization, and writing for fully autonomous research workflows (Python, LLM)
- Designed shared-memory reasoning for coordination and long-context communication among agents
- Enabled end-to-end autonomous research, from question parsing to code generation and manuscript writing
- Validated on grapevine red blotch disease prediction using multi-year vineyard data, achieving interpretable, cross-year generalizable models

Embodied AI for Laboratory Automation

Ithaca, NY

Graduate research @ Cornell University

Jan 2024 – Feb 2025

- Built an integrated mobile manipulation system for autonomous sample handling (ROS2)
- Combined Nav2 with RTAB-Map and multi-sensor fusion (camera, LiDAR, IMU, indoor GPS)
- Designed a custom end-effector (Fusion) and modular motion primitives enabling precise pick-and-place
- Developed a deep reinforcement learning-based semantic navigation policy using dual-camera and waypoint inputs, achieving collision-free, goal-directed motion in Isaac Sim and Habitat

Magnetic Microrobot for Single-Cell Manipulation

Hangzhou, China

Undergraduate research @ Zhejiang University

Oct 2021 – May 2023

- Designed and controlled a magnetic microrobot system for 2-D motion and cell-level grasping (ROS1)
- Integrated vision feedback, Kalman filtering, and trajectory planning for closed-loop precision control

Human Pose Estimation for Robotic Perception

Hangzhou, China

Research intern @ Iplusmobot

May 2022 – Aug 2022

- Developed a real-time 3-D human-pose estimation pipeline for robotic perception using stereo vision and Kalman filtering (PyTorch, OpenCV, C++)
- Benchmarked and customized OpenPose and AlphaPose frameworks to improve multi-person tracking stability and temporal consistency

Publications

- **Jin, D.**, Gunner, N., Janke, N. C., ... & Jiang, Y. (2025). Aleks: AI powered Multi Agent System for Autonomous Scientific Discovery via Data-Driven Approaches in Plant Science. arXiv
- Wang, F., Zhang, Y., **Jin, D.**, ... & Zhou, M. (2024). Magnetic Soft Microrobot Design for Cell Grasping and Transportation. Cyborg and Bionic Systems, 5, 0109
- Guo, X., Zhang, Y., **Jin, D.**, & Zhou, M. (2022). A Review of Single-Cell Pose Adjustment and Puncture. Advanced Intelligent Systems, 4(11), 2200096