

# Yuchen (Iris) YANG

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## Education

**Shanghai Jiao Tong University (SJTU)**

*Sept. 2021 – Jun. 2025*

*Bachelor of Science in Mechanical Engineering*

- GPA: 3.53/4.30 (85.03/100.00)
- A/A+ Courses: Robotics (95), Design and Manufacture II (92), Engineering Materials(90), Manufacturing Process (91)

## Experience

**JAKA Robotics**

*Jun. 2024 – Apr. 2025*

*Research Intern, Robotics Division Research and Development Center*

*Shanghai, China*

- Architected a MuJoCo simulation environment for dual-arm robots, encompassing multiple task scenarios.
- Constructed a demonstration collection pipeline using a data glove to map motions, yielding a dataset of more than 30 demonstrations for stacking tasks.

## Publications

**Characterizations of Voluntary and Involuntary Imagery in Aphantasia (Under Review)**

*May. 2024*

Suna Duan\*, **Yuchen Yang\***, Kangxin Li, and Binglei Zhao

- Designed sophisticated experimental paradigms to explore imagery presence and duration effects on grating rotation judgments, clarifying the functions of voluntary and involuntary imagery.
- Implemented the experimental paradigms as an interactive interface using MATLAB Psychtoolbox, ensuring high fidelity in stimulus presentation and response collection.

## Projects

**Contact-Rich Vegetable Peeling via Diffusion Policy Learning**

*Jan. 2025 - May. 2025*

*Undergraduate Graduation Project | Advisor: Prof. Xinjun Sheng (Meta Robotics Institute, SJTU)*

- Built a VR teleoperation system to collect multimodal data for a dual-arm vegetable peeling task, resulting in a custom dataset of 100 demonstrations.
- Developed CNN-based and Mamba-based Diffusion Policy models to jointly model multimodal sensory inputs and action-force outputs.
- Designed a compliant control strategy that integrates predicted positions and contact forces, enabling safer and more flexible manipulation.
- Conducted a comprehensive evaluation of model-control combinations, achieving over 80% peeling success rate.

**Multi-Robot Formation and Connectivity Control**

*Oct. 2024 - Jan. 2025*

*Group Leader | Advisor: Prof. Wei Dong (Institute of Robotics, SJTU)*

- Led the team in achieving autonomous formation and obstacle avoidance for five AGVs, accomplishing adaptive formation under variable obstacle conditions and dynamic role allocation.
- Utilized the Soft Actor-Critic (SAC) framework to implement optimal connectivity maintenance control for four robots under limited field of view conditions, innovating the logic for observation target selection and the design of the reward function.

**A Self-Designed 6-DoF Robot Arm**

*Mar. 2024 - Jun. 2024*

*Group Leader | Advisor: Prof. Zhenhua Xiong, Dr. Jianhua Wu (Institute of Robotics, SJTU)*

- Led the entire design and development process, covering modeling, kinematics, dynamics, and other advanced functions.
- Orchestrated an in-depth kinematic analysis with formula derivation and code implementation, including

forward kinematics, inverse kinematics and Jacobian matrix.

- Implemented a function for workspace visualization feature and an obstacle avoidance function using the Rapidly-exploring Random Tree (RRT) algorithm.

### **A Frog-like Bionic Amphibious Robot (Top 20%)**

*Oct. 2023 - Dec. 2023*

*Group Leader | Advisor: Prof. Xinjun Sheng (Meta Robotics Institute, SJTU)*

- Orchestrated the design, modeling, and manufacturing of a bionic frog robot.
- Built the Energy Storage and Release Module, integrating a cam and torsion spring system to enable powerful and sustainable jumping and swimming motions.
- Created the Mode Switching System, allowing the efficient transition between jumping and swimming modes.

### **Exploring the Neural Correlates of Visual Imagery Vividness: A fMRI Study Utilizing BC-GCN**

*Jul. 2022 - Aug. 2023*

*Research Assistant | Advisor: Dr. Binglei Zhao (Institute of Psychology and Behavioral Science, SJTU)*

- Built Brain Connectivity Graph Convolutional Network (BC-GCN) for predicting Vividness of Visual Imagery Questionnaire (VVIQ) scores from brain functional connectivity, with a prediction error of 8.7% relative to the actual scores.
- Employed BackTracking to pinpoint brain areas linked to visual imagery vividness.

## **Skills**

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**Languages:** Mandarin (native), English (TOEFL 102, with Speaking 25)

**Programming:** Python (Pytorch), C++, JavaScript, HTML, Astro

**Professional Tools:** ROS2, SolidWorks, MATLAB, MuJoCo, Adams, Ansys, COMSOL, LabVIEW