Yuchen YANG

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Education

Shanghai Jiao Tong University (SJTU) *Sept.2021 – June.2025*
BS in Mechanical Engineering *Shanghai, China*

- GPA: 3.49/4.3 (84.4/100), Junior GPA: 3.77/4.3 (88.2/100)
- Core Courses: Robotics (95), Design and Manufacture II (92), Engineering Materials(90), Manufacturing Process (91), Theoretical Mechanics (89)

Experience

JAKA Robotics *June.2024 – Present*
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.
- Developed a demonstration-based reinforcement learning framework that achieved a success rate of XX% in long-horizon stacking tasks, demonstrating the capability to generalize solutions to unfamiliar stack configurations.

Publications

Characterizations of Voluntary and Involuntary Imagery in Aphantasia *Preprint* *May.2024*

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

- Designed sophisticated experimental paradigms with MATLAB Psychtoolbox to explore imagery presence and duration effects on grating rotation judgments, clarifying the functions of voluntary and involuntary imagery.
- Collected data from more than 40 subjects and performed data preprocessing for the control group.

Projects

A Self-Designed 6-DoF Robot Arm *Mar.2024 - June.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 (Excellence Award, 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.

Machining Process Plan for an Irregular Part *Apr.2024 - June.2024*
Researcher | Advisor: Assoc. Prof. Jingyu Pei (Institute of Manufacturing Technology and Equipment Automation, SJTU)

- Enhanced the part structural processability through iterative design, achieving stringent precision requirements.
- Designed detailed process procedures for mass production, incorporating dimensional chain analysis.

Exploring the Neural Correlates of Visual Imagery Vividness: A fMRI Study Utilizing BC-GCN *Jul.2022 - Aug.2023*
Researcher | 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.
- Employed BackTracking to pinpoint brain areas linked to visual imagery vividness.

Technologies

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

Programming: Python, C++, JavaScript, HTML, Pytorch, Astro

Professional Tools: SolidWorks, MATLAB, MuJoCo, Adams, Ansys, LabVIEW