

Jiacheng Xu

+49 15151229159 | xujiacheng1016@hotmail.com | www.linkedin.com/in/jiacheng-xu-293373241

EDUCATION

KTH Royal Institute of Technology & Technische Universität Berlin

Stockholm & Berlin

Joint Master in Computer Simulation for Science and Engineering (COSSE)

Oct 2023 - Current

- Applied Mathematics with applications in AI and physics-based simulations.
- **Main courses:** Large-scale Matrix Computations, Model Reduction, GPU Programming, Computer Vision

University of Bath

Bath, UK

MSc in Robotics and Autonomous Systems

Oct 2022 - Oct 2023

- Robot Simulation, Control, Reinforcement and Deep Learning
- Thesis: "Comparing Machine Learning Models for EEG Workload Detection"

Qingdao Institute of Technology

Qingdao, China

BEng in Mechanical Design Manufacturing and Automation

Sept 2018 - July 2022

- Design and manufacture of mechatronic system

PROJECTS

Vision-Language Conditioned Robotic Manipulation



ROS2, Isaac Sim, UR5 Robot

Aug 2024 - Current

- **System Integration:** Integrate DINO-X (vision model from Meta) with Gaussian Splatting (3D reconstruction technique) to enhance robotic perception and spatial understanding.
- **Task Automation:** Leverage GPT-o1 to break down complex manipulation tasks into smaller, solvable actions
- **Hardware Commission:** Calibrate the RGB-D camera on the robotic arm, to align world coordinates with robot coordinates

Brain-Computer Interface



OpenBCI, TensorFlow

Nov 2022 - Sept 2023

- **Signal Processing:** Designed and optimized preprocessing pipelines for EEG signals to enhance signal-to-noise ratios.
- **Machine Learning Models:** Applied and compared multiple models—Filter Bank Common Spatial Pattern (FBCSP), Convolutional Neural Network (CNN), Residual Network (ResNet), Long Short-Term Memory (LSTM) with spectrograms, and Graph Convolutional Network (GCN)—achieving up to 75% classification accuracy on three classification tasks.

Reinforcement Learning for Game



TensorFlow, OpenAI Gym

Sept 2022 - Nov 2022

- **Objective:** Trained several AI agents to land on lunar safely using OpenAI Gym's environment.
- **Algorithm Comparison:** Experimented with four reinforcement learning algorithms: Deep Q-Network (DQN), Proximal Policy Optimization (PPO), Soft Actor-Critic (SAC), and Advantage Actor-Critic (A2C)—and compared their performance.
- **Results:** Achieved successful landings post 2,000 training episodes; DQN showed highest convergence speed and policy effectiveness.

National Smart Car Contest



C, Embedded Systems

Dec 2019 - Aug 2021

- **Algorithm Design:** Developed custom computer vision algorithms for lane detection and path planning (without OpenCV).
- **Control Systems:** Implemented PID controllers for dynamic speed and direction control.
- **Stability Improvement:** Applied Kalman filter for angle estimation, enhancing vehicle stability on sharp turns.
- **Achievement:** Sixth place in a 1,000-team race.

Mathematical Contest in Modeling

Qingdao, China

MATLAB

Oct 2020 - Nov 2021

- **System Optimization:** Optimize the design of radio telescope reflector panels, focus the electromagnetic wave signals to the ideal parabola
- **Publication:** Xu, J., Zhang, W., Hou, X. and Wan, Q., 2022. Aperture Spherical Radio Telescope (FAST) celestial signal reflection system. Electronic Test, 2022(03), pp.62-64.

WORK EXPERIENCE

Retrieval-Augmented Generation with Local LLM



Startup

Jan 2025 - Current

- **Product Development:** Developed a fully local AI chatbot leveraging retrieval-augmented generation (RAG) with tokenized local documents.
- **Collaboration:** Engineered the backend for local LLM and document tokenization while coordinating with the frontend team.

Huanchi Bearing Group Co., Ltd.



Engineer Intern

Dec 2020 - Feb 2021, Jul 2019 - Aug 2019

- **Optimization Design:** Provide ABB Ltd locations, to mount bearings in the robotic arm.
- **Technical Collaboration:** Assisted senior engineers to troubleshoot mechanical issues, improving robotic arm load-bearing and life span.

TECHNICAL SKILLS

Simulation ROS2; Rviz; Isaac Sim

Programming Python; C; Rust; MATLAB

Design Software Autodesk Inventor; AutoCAD

Languages English (Fluent), Mandarin Chinese (Native), German (Intermediate), Swedish(Beginner)