Yixuan Wang

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EDUCATION

Johns Hopkins University, Master of Engineering in Computer Science, *Baltimore MD* 01/2023 – Present

- Major: Computer Science - Natural Language Processing
- Current Coursework: Machine Learning: Deep Learning, Iterative Algorithms in Machine Learning, Time Series Analysis, Natural Language Processing, Machine Translation, Artificial Intelligence, Intro to datasci

University of Florida, Master of Science in Mechanical Engineering, *Gainesville FL* 08/2020 – 06/2022

- GPA: 3.75/4.0; Herbert Wertheim College of Engineering Achievement Award Scholarship
- Major: Mechanical Engineering - Dynamics & System Control; Minor: Electrical and Computer Engineering
- Relevant Coursework: Geometry of Robot & Mechanism I/II, Control Theory, Robust & Adaptive Control, Data Measurement & analysis, fundamental machine learning, state variables in linear systems, computer architecture

Tongji University, Bachelor of Science in Mechanical Design Manufacture and Automation, *Shanghai, China* 09/2015 – 06/2020

- Relevant Coursework: foundation of control engineering, testing and control, numerical analysis, motor and electric drag, mechanical vibration, probability and mathematical statistics, C/C++ programming, data structure and algorithm, electrical engineering (electronic technology & electrical engineering), mathematical experimenst

RESEARCH PROJECTS

Superhuman Performance 10/2023 – Present

- Developing a novel method to compose three different Reinforcement learning trajectories into one new trajectory. The new trajectory will combine the different features (performance) of the given three trajectories.

Off-Dynamics Reinforcement Learning via Probabilistic Inference and Imitation Learning 07/2023 – Present

Mentored by: Dr. Anqi Liu, Johns Hopkins University

- In this paper, we focus on a specific transfer learning problem in RL, where the dynamics between the source and the target are different. We propose a new reinforcement learning paradigm for transfer learning that learns a policy that generates optimal trajectories on the target domains and then utilizes imitation learning to mimic the optimal trajectories on the target domain.

Wasserstein Generative Adversarial Imitation Learning with Gradient Penalty 02/2023 – 06/2023

Mentored by: Dr. Mathias Unberath, Johns Hopkins University

- GAIL utilizes the conventional GAN architecture to minimize the Jenson-Shannon divergence between the agent's occupancy measure and the expert's occupancy measure. However, GAIL faces challenges related to model collapse and gradient vanishing issues. To address these concerns, a modification is introduced by replacing the Jenson-Shannon divergence with the Earth Moving distance as the discriminator criteria. This alteration guarantees the existence of proximal equilibria, ensuring convergence to an optimal state. The Wasserstein GAIL variant is anticipated to surpass traditional GAIL by significantly enhancing both the training process efficiency and the overall performance of the agent.

Output Feedback Flight Control System for Medium-Range Air-to-Air Interceptor Missile 11/2020 – 12/2020

Mentored by: Dr. Benjamin Dickinson, University of Florida

- This was my final project for the course of robust and adaptive control. The feedback design of servo-mechanism was applied to the vertical acceleration command-tracking controller, and the Leuenberger observer was designed to estimate the full state of LQR-state feedback law. The system realized the progressive tracking of target input, obtained system-control parameters that made the system have less overshoot and faster response time, and realized the kinematic simulation of missile-aircraft collision.

Cooperative Control of Ground Rail Robot & Manipulator Controller for Automatically Grabbing Bolt

Mentored by: Dr. Guangjun Liu, Tongji University 01/2020 – 06/2020

- The aim of this project was to determine the workspace of a robotic arm by applying forward kinematic analysis, and to calculate the desired motion of the ground rail by comparing the desired position of the end actuator and the workspace. Programmable Logic Controller was used to control the position, altitude, and direction angles of the ground rail and a mechanical arm with six degrees of freedom to realize the multi-point continuous operation and the cooperation of the related end actuators. Human-computer interface acted as the motion switch and position- and altitude-monitoring instrument of the mechanical arm.

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INTERNSHIPS

Machine Learning Algorithm Researcher, Shanghai Momenta Autopilot Technology Co., Ltd., *Shanghai, China*
10/2022 – Present

- Develop and implement advanced Reinforcement Learning (RL) algorithms for autopilot systems
- Conduct in-depth research on the latest advancements and trends in the realm of reinforcement learning to ensure the integration of cutting-edge technology into the project

Research & Development Intern, Shanghai XPT Nio Drive Technology Co., Ltd., *Shanghai, China* 06/2019 – 11/2019

- Assisted with the financial process including progress approval and financial reimbursement
- Conducted marketing research on peer brands of electric and hybrid-electric vehicles to evaluate brand-pricing strategies
- Used SQL to manage the detailed information of EDS

SKILLS

Language Skills: German - B2 level, English - Proficient, Mandarin - Native

Computer Skills: Proficient in Python, MATLAB and Simulink; Proficient in robotics geometry and system control; Proficient in designing and training AI models