

Yan Ma

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EDUCATION

- **Fudan University** Shanghai, China
M.S. in Computer Application Technology (postgraduate recommendation) *Sep. 2020 – Jun. 2023*
- **Dalian University of Technology** Dalian, China
B.Eng. in Computer Science and Technology; GPA: 4.076/5; Rank: 12/123 *Sep. 2016 – Jun. 2020*

RESEARCH INTERESTS

- **Quality-Diversity Solution Discovery:** Search high-performing solutions with diverse characteristics to resolve tasks flexibly via Reinforcement Learning (RL), Evolutionary Algorithm (EA), Generative Models (GM).
- **RL Application in High-Dimensional Motion Control Tasks:** Control the simulated robot to learn various skills and act like a human. Especially, I'm very interested in learning athlete skills, such as *one hundred metres*.

PROJECTS (SELECTED)

- **Reinforcement Learning Plot Library** *Apr. 2023 - Apr. 2023*
 - An highly encapsulated RL plot library, including basic error bar lineplot and a wrapper to *riable*.
 - Hyperparameters are managed through *hydra*, and all drawings can be run in one command.
 - Provide a vivid illustration on how to utilize this repository for the analysis and plot of RL experiments.
- **Soccer AI imitation learning for specific goal scoring styles** *Jul. 2022 - Sep. 2022*
 - Imitate AI policies with specific goal-scoring styles in *COG 2022 Football AI Competition*.
 - Leverage Generative Adversarial IL to imitate each player on the court with only 30+ game dumps.
 - Design the state representation of “Goal via Pass” goal-scoring style and achieve efficient imitation.

PUBLICATIONS

- **Quality-Diversity Reinforcement Learning for Motion Control Tasks** [[Website](#)]
Master Thesis, Fudan University 2023
 - Due to the limited prior knowledge, RL may suffer from susceptibility and struggle to quickly and fully extract useful information from tasks.
 - This paper introduces two RL methods that leverage the concept of Quality-Diversity as prior knowledge.
 - Experiments on dense/sparse reward, and uneven terrain tasks demonstrate that the proposed method enhances learning efficiency and final performance across a range of tasks, with reliable evaluation supporting these findings.
 - The zero-shot adaptation experiments demonstrate that the policy trained by proposed method exhibits superior transfer and generalization capabilities.
- **Open-Ended Diverse Solution Discovery with Regulated Behavior Patterns for Cross-Domain Adaptation** [[PDF](#)]
Association for the Advancement of Artificial Intelligence (AAAI) 2023
Kang Xu, [Yan Ma](#), Wei Li, Bingsheng Wei
 - Focus on regulated diverse behavior pattern discovery in Diversity-driven Reinforcement Learning, which can facilitate cross-domain adaptation.
- **Evolutionary Action Selection for Gradient based Policy Learning** [[PDF](#)]
International Conference on Neural Information Processing (ICONIP) 2022 (Oral)
[Yan Ma](#), Tianxing Liu, Bingsheng Wei, Yi Liu, Kang Xu, Wei Li
 - Focus on inefficiency and brittleness in Evolutionary Reinforcement Learning (ERL) due to the utilization of Evolutionary Algorithms (EA) to optimize high-dimensional parameter space of policy network.

HONORS AND AWARDS

- Fudan University Master's Academic Excellence Scholarship *2022*
- Fudan University Master's Academic Excellence Scholarship *2021*
- Dalian University of Technology Outstanding Graduates *2020*

PROGRAMMING SKILLS

- **Languages:** Python, C/C++, Bash **Technologies:** Pytorch, Numpy, Mujoco, NeoVim, Tmux, Ray, Git