SICHANG SU

+65 84159621 | E1192828@u.nus.edu| https://github.com/Destiny000621

EDUCATION

Zhejiang University (ZJU), School of Aeronautics and Astronautics — Hangzhou, China
Bachelor of Engineering — Sept. 2019 – July 2023

- Major in Engineering Mechanics
- GPA: 3.67/4
- Honor & Scholarship/ Major courses:Academic Progress Award 2020-2021/ *Linear Algebra, Fundamentals of C Programming, The Training of Computational Program Design, Computational Methods, Theoretical Mechanics, Advanced Experimental Solid Mechanics*

Zhejiang University - University of Cambridge — Online
Finance and Western Culture Online Communication Programme — Jan. 2023 – Feb 2023

- Course Topics: *Business Ecosystem and Artificial Intelligence, Global Value Chain and Economic Development*

National University of Singapore (NUS), College of Design and Engineering — Singapore
Master of Science — Aug. 2023 – Now

- Major in Mechanical Engineering
- GPA: 5/5
- Major courses: *Machine Learning in Robotics, Machine Vision, Computer Control and Applications*

PUBLICATION

Sentimental Analysis Applied on Movie Reviews

Su S.(2022) Vol. 3 (2022): 2022 International Conference on Art Design, E-Education and Innovation Management (ADEIM 2022).pp.188-195. https://doi.org/10.54097/ehss.v3i.1685

- Abstract: Nowadays, Natural Language Processing has received the widespread attention from the natural sciences, and sentimental analysis is one of the most widely used NLP applications. In the age of big data, how to find the required information accurately and quickly has become the hotspot of current research. Based on the movie reviews of two movies from the same series, this paper studies the sentimental trend of movies reviews, in order to help the audience obtain a reference for movie choices. Term frequency-Inverse Document Frequency(TF-IDF) algorithm is applied to evaluate the importance of words in the reviews, and TextBlob sentiment analysis library of Python software is used to grade the sentiment scores of the two films. Finally, the sentiment score graph is drawn, which provides a strong support for the further identification of the movie characteristics of two films from the same series. What's more, Support vector machines(SVM) model is utilized to do the classification of the movie reviews and achieved 85.2% accuracy.

RESEARCH EXPERIENCE

Explicit Coordination with Multi-Agent Reinforcement Learning Skills in Multi-Agent Systems

Supervisor: Professor Guillaume Sartoretti — Aug. 2023 – Now

Multi-Agent Reinforcement Learning (MARL) presents unique challenges, notably credit assignment and non-stationarity, complicating the learning process in comparison to Single-Agent Reinforcement Learning. Directly developing an effective cooperative policy through decentralized learning, which depends exclusively on the knowledge and memory of individual agents, poses significant difficulties, and in some cases, may be unfeasible. Skill discovery may be a possible solution. Besides, incorporating global/local communication among agents or agent teams offers a potential resolution to these challenges. This approach enables agents to exchange information and intentions while preserving scalability. Consequently, it mitigates issues related to partial observability and non-stationarity, and enhances joint collaboration at the team level. In essence, communication empowers dispersed agents to operate cohesively as a unified group, rather than merely as an assembly of independent entities.

Efficient Multi-Task Multi-Agent Reinforcement Learning with both offline and online data

Supervisor: Professor Guillaume Sartoretti — Oct. 2023 – Now

With the potential to solve complicated real-world problems, cooperative Multi-Agent Reinforcement Learning(MARL) has drawn tremendous attention recently. Since most MARL methods learn policies online in a single task using simulating

environments, there exist two problems when contemplating its deployment in real-world robotic scenarios. Firstly, online reinforcement learning agents demonstrate sample inefficiency, necessitating billions of environmental interactions to attain optimal performance. Such a magnitude of sample interaction is not merely impractical but often unfeasible for the majority of real-world robotic applications. Secondly, a limited number of existing MARL algorithms can adapt to multiple tasks with varying agents and targets. In response to these challenges, this study proposes a novel MARL algorithm using both offline and online data. This integration aims to enhance sample efficiency and overall performance. We hypothesize that this approach will surpass the performance boundaries imposed by existing datasets and address pertinent issues such as distribution shift and out-of-distribution challenges.

Data Science and Big Data Analytics: Theory and Best Practice
Supervisor: Professor Mark Vogelsberger — Apr. 2022 – June 2022

- Used python and R to achieve logistic regression. In the process of using R and Python to achieve a program about logistic regression
- Used python and Mongodb to analyze datas from from a movie website
- learned the basic knowledge of machine learning, and built a LSTM model to train data.
- Scored straight As in the assignment, final project and total grade

Google — Remote
Data Engineer Assistant — Jan. 2022 – Feb. 2022

- Designed data storage schema using SQL
- Designed and built an Application Programming Interface (API) using Python
- Designed a Hadoop cluster using Hadoop, HDFS and MapReduce
- Built data models for Twitter with parallel distributed system, load balancer, RDBMS, SQL, TCP/IP, HTTP, API and Hadoop
- Mastered twitter's fundamental models like clients, load balancer, application server, database and file storage

EXTRACURRICULAR ACTIVITIES

Yunshang Book Club — Hangzhou, China
Volunteer — July 2022 – Oct. 2022

- Edited transcripts for reading events and highlighted key conversations
- Uploaded publicity videos to online platforms like bilibilli and ixigua
- Managing the volunteer database using MySQL
- Using Python to call database information to send out a group tweet

ZJU Lantian Self-study Room — Hangzhou, China
Administrator — Dec. 2019 – Jan. 2020

- Managed sanitary and maintenance affairs including key-keeping and daily cleaning

Environmental Volunteer Services — Hangzhou, China
Volunteer — Dec. 2019

- Picked up garbage, removed unwanted posters and handed out educational flyers

TECHNICAL SKILLS

Programming Languages: Python, R, C, Mysql, MATLAB, LaTeX
Software & Tools: Git, TensorFlow, PyTorch