YAO YIRAN

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Education

Shanghai Jiao Tong University Shanghai
Undergraduate, Measurement Control Technology and Instruments *Sep. 2018 – June 2022*

- Grade Code, 84.1/100, 3.48/4.3
- Thinking and Approach of Programming, 95, A+
- Stochastic Simulation Methods and Its Applications, 93, A
- Discrete Mathematics, 94, A
- Deep Learning and Its Applications, 95.25, A+
- Reinforcement Learning, 89, A-
- Machine learning (AI), 96.4, A+
- Compiler Principles, 90, A
- Computer Network, 92, A

Research

On Symmetry Property in Adversarial Examples Sep. 2020 – Nov. 2020
with Prof. Bingbing Ni *SJTU, Shanghai*

- Discover an intriguing phenomenon called Symmetry Property in adversarial examples
- Design a novel loss function that constrain features to improve robustness
- Achieve SOTA performance even compared to Adversarial Training
- Submit the paper to CVPR2021 as the third author
- Personal Contribution: Run most of experiments and propose the final version of loss function
- Open Source Code on Github

Identifying Influential Inputs in Probabilistic Logic Programming Aug.2020 – Present
with Prof. Wenchao Zhou *Georgetown University*

- Propose a provenance-based approach towards identifying influential inputs in PLP programs
- Evaluate the system in a visual question answering scenario and demonstrate its effectiveness
- Ready to submit the paper to VLDB2021 as the fourth author

Coding Projects

2048 Game | *Python, Jupyter Notebooks, TensorFlow, Keras* Mar. 2020 – June 2020

- Construct a Deep Convolutional Neural Network to play 2048 Game
- Implement Ensemble Learning to improve performance
- Achieve a full score in the final check
- Open Source Code on Github

Atari & MuJoCo | *Python, Jupyter Notebooks, PyTorch, Keras* Mar. 2020 – June 2020

- Implement Deep Q Network to play Breakout in Atari Games
- Implement Proximal Policy Optimization to control the Hopper and Ant in MuJoCo
- Write a document to show the results and express my thinking about the algorithms

Context-Free Grammar Compiler | *C++, Visual Studio* Mar. 2020 – June 2020

- A program that can detect Operator Grammar
- Automatically output an Operator precedence analysis table
- Write a design and test manual

Melody Generation | *Python, Jupyter Notebooks, TensorFlow, Keras* Sep. 2019 – Jan. 2020

- Melody Generation Using Seq2Seq Model with Attention
- Recur a rather novel model in the task
- Introduce chord rules into the model
- Collaborate with classmates to complete a course paper

Deep Learning Specialization | *Python, Jupyter Notebooks* Aug. 2019 – Oct. 2019

- Learn basic knowledge on DNN, CNN, RNN, etc.
- Use Numpy to build basic Neural Network structure
- Exercise various skills in model training
- Learn how to use the TensorFlow framework
- Exercise how to detect and fix bugs in real applications
- Exercise the theory and applications of CV & NLP
- See Course Certificate

Game Theory | *C++, MATLAB, R* June 2019 – Aug. 2019

- Research on the Evolution of Game under long-term memory
- Establish a mathematical model to simulate the prisoner's dilemma with long-term memory
- Cellular Automata is used as one of the models
- Collaborate with classmates to complete a 30-page course paper

Awards

The Mathematical Contest in Modeling 2020 Feb. 2020

Problem Chosen – A

- Be designated as Meritorious Winner
- Predict the sea surface temperature in the next 50 years
- Speculate on how temperature changes will affect fishery
- Provide fishermen with strategies from the perspective of long-term profit
- See Certificate of Achievement

The Mathematical Contest in Modeling 2019 Jan. 2019

Problem Chosen – A

- Be designated as Successful Participant
- Restore the possible ecology of dragons in reality
- Introduce factors such as geographical location, weather and characteristic to enrich the model
- Put forward the strategy of coexistence between human society and dragons
- See Certificate of Achievement

Skills

Computer Languages: Python, C/C++, Git, MATLAB, R
Python Libraries: Numpy, Matplotlib, PyTorch, TensorFlow, Keras
Human Languages: Chinese, English
Developer Tools: Jupyter Notebook, Git, VS Code, Visual Studio