Facheng Yu

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School of Mathematics and Statistics, Wuhan University

EDUCATION

Wuhan University - Wuhan, Hubei, China Graduation: June 2023

- **Basic information:** Bachelor of Science in Mathematics, GPA: 3.84/4.00 (90.3/100), rank: 3/30.
- **Key courses:** Mathematical Analysis, Advanced Algebra, Abstract Algebra, Ordinary Differential Equations, Topology, Real Analysis, Complex Analysis, Differential Geometry, Probability Theory, Functional Analysis, Partial Differential Equations, C Language and Practice, Numerical Analysis, Optimization Theory and Methods.
- **Elective courses:** Quantum Information and Quantum Computation, Fluid Mechanics, Mathematical Experiment, Multi-complex Analysis, Multi-scale Analysis.
- **Awards:**
  - Third prize of Asia and Pacific Mathematical Contest in Modeling Jan. 2022
  - Third prize of The Chinese Mathematics Competitions Dec. 2021
  - Second class scholarship Oct. 2021
  - Third class scholarship Oct. 2020

RESEARCH EXPERIENCE

Wuhan University undergraduate innovation project Apr. 2021 - Sept. 2022

- **Project:** A precipitation prediction system based on machine learning and multi-source data
- **Task:** We aim to combine the data derived from the radar and the one from the GNSS in order to improve the effects of current rain forecast methods based on the machine learning. And I mainly participate in code implementation and writing.
- **Output:** one paper (under review) about rain forecast based on the traditional three-predictor threshold method.

Computer Vision & Remote Sensing Lab, Wuhan University Oct. 2021 - Jan. 2022

- **Project:** The Application of deep learning in multi-view commodity recognition
- **Task:** the project, based on the scene of vending cabinet, aims to use deep learning to automatically recognize the commodities taken out of the container in the video. My work is to implement the recognition model, and to test the influence of different losses and backbones on the recognition effect.

ONLINE PROJECTS

Yau Mathematical Sciences Center, Tsinghua University - Beijing, China
Online summer school | Completed Jun. - Aug. 2020

- **Course:** examples and exercises of big data analysis (Prof. Zhang Xiaoming)
- **Content:** This course mainly describes the basic process and technology of data analysis. There will be a group project every week in the course. I took turns in the group to be responsible for the display, data processing and modeling implementation.

University of Cambridge - Cambridge, U.K.
Theoretical neuroscience online project | Score: A Jan. - Feb. 2021

- **Course:** Theoretical Neuroscience (Prof. Guillaume Hennequin)
- **Project:** Balanced network models of cortical circuits
- **Content:** This course introduces the basic models of nerve and network of cortical circuits, as well as the knowledge of perception, decision-making, vision and so on. The final project is to build a digital balanced network of cortical circuits, and I was mainly responsible for the mathematics and code implementation.

Artificial intelligence online project | Score: A- July - Oct. 2021

- **Course:** Artificial Intelligence (Prof. Pietro Liò)
- **Project:** Video summarization with flexible multi-agent reinforcement learning
- **Content:** This course introduces some state-of-the-art models of deep learning, mainly graph neural network and multi-agent reinforcement learning. Our group decided to reproduce a paper on the application of reinforcement learning in the video summarization. I was responsible for the code implementation of reinforcement learning.

SKILLS

Ability to adapt to English environment

- College English Test Band 4: 575; College English Test Band 6: 517.
- Have several English online project experiences.
- Have English paper reading ability.

Skills for coding

- Finished several projects with PyTorch.

Quick understanding for mathematics

- Be able to quickly understand the mathematical methods and mathematical derivation in the deep learning algorithm.

Passion for research

- I would like to apply my knowledge about mathematics to create more useful tools and to better understand the world.