XIANG FEI

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Address: The Chinese University of Hong Kong (Shenzhen), Shenzhen, Guangdong Province
Date of Birth: October 8, 2002

EDUCATION

The Chinese University of Hong Kong (Shenzhen) 2020.09 - Present
Bachelor of Engineering, Computer Science and Engineering
Cumulative GPA: 3.773/4.000
Major GPA: 3.886/4.000

The University of California, Berkeley 2023.01 - 2023.05
Berkeley Global Access Program
Visiting students

Carnegie Mellon University Expected 2023.06 - 2023.08
Robotics Institute Summer Scholars (RISS) Program
Biorobotics Lab, Mentor: Prof. Howie Choset
Summer Scholar

PAPERS (INCLUDING WORKING PAPERS)

"Quantum Computing Based Power System Fault Diagnosis with QAOA and Gate Decomposition," Ready to Submit (First Author)

"Linear-Layer-Enhanced Quantum Long Short-Term Memory for Carbon Price Forecasting," Submitted to IEEE Transactions on Quantum Engineering (under review, has passed the first review now) (Third Author)

"Carbon Disclosure Effect on Listed Companies under the Net-zero Emission Target: The Case of China," National Outstanding Award of National University Student Energy Economy Academic Creativity Competition. Ready to Submit (Second Author)

"Simulation Modeling Analysis of Carbon-Electricity Market in the Context of Carbon Neutrality," Submitted to Journal of Electric Power Science and Technology (Co-author)

"Carbon Rating Report of China's 100 Overseas Listed Companies," (REPORT) Published at the 2022 Global Forum on Sustainable Development (Co-author)

RESEARCH EXPERIENCE

Energy Internet Lab, School of Science and Engineering, CUHK(SZ) 2021.08 - Present
Mentor: Prof. Junhua Zhao

Quantum Computing Algorithm for Power System Fault Diagnosis 2022.08 - Present
· Solved power system fault diagnosis problem based on quantum approximate optimization algorithm.
· Used the Ising model to derive the Hamiltonian of the power system fault diagnosis problem.
· Proposed and proved the symmetric equivalent decomposition of multi-qubit rotation gate.
· Applied the small probability event characteristic in power system faults to the proposed quantum algorithm.
· Wrote the code and conduct the experiments.
· Read relevant papers.

Quantum Machine Learning for Carbon Price Forecasting 2022.04 - 2022.09
· Proposed and applied Linear-Layer-Enhanced Quantum Long Short-Term Memory for carbon price forecasting.
· Participated in the design of the algorithm, including the design of the fully connected layer and the design of the variational quantum circuit.
· Participated in the code writing to implement the proposed L-QLSTM.
· Read relevant papers and completed the writing of the paper.
· The paper has submitted to IEEE Transactions of Quantum Engineering and passed the first review now.

Establish a Firm-Level Carbon Emission Database with Computer Vision 2022.05 - 2022.12
· Responsible for the idea design and code writing of the entire project.
· Wrote the code of web crawlers and obtained the ESG reports of 4336 Chinese A-share listed companies from the official websites of Shenzhen Stock Exchange and Shanghai Stock Exchange.
· Designed a pipeline using PP-PicoDet, SLANet and Ultra Lightweight OCR System (PP-OCRv3) to extract table content in ESG reports.
· Write the code to implement table recognition and the OCR system.
· Read relevant papers.

The Impact of Carbon Disclosure on Company Financial Performance 2022.01 - Present
· Established a database of 4336 Chinese A-share listed companies' emission disclosure information (boolean variables) from 2017 to 2022 using web crawlers and traditional table recognition technology.
· Established difference-in-differences models to analyze the impact of carbon disclosure behavior on company fundamentals from cumulative and dynamic perspectives.
· Explored the association between company stock market performance, carbon disclosure behavior and the establishment of China's national/regional emission trading systems (ETS).
· Read relevant papers and completed the writing of the paper.

Shenzhen Institute of Artificial Intelligence and Robotics for Society (AIRS) 2021.08 - 2022.09
Mentor: Prof. Junhua Zhao

Carbon Rating Report of China's 100 Overseas Listed Companies 2021.08 - 2022.06
· Participated in the design of the carbon score calculation method.
· Participated in the selection of metrics that can measure corporate carbon scores.
· Collected and organized energy disclosure data of China's 100 Overseas Listed Companies.
· Research Report Published at the 2022 Global Forum on Sustainable Development.

Simulation Modeling Analysis of Carbon-Electricity Market 2022.07-2022.09
· Read relevant papers and completed the writing of the whole paper.
· Revise the paper according to the review comments.

Human Language Technology Laboratory, Shenzhen Research Institute of Big Data 2022.09 - Present
Mentor: Prof. Haizhou Li

EEG-based auditory attention 2022.10 - Present
· Participated in the collection experiments of EEG data.
· Read relevant papers.
· Reproduce some deep learning-based EEG-driven auditory attention methods.
· Participated in ICASSP2023 manuscript review.

INTERNSHIP EXPERIENCE

Energy Internet Lab, SSE, CUHK(SZ) 2021.08 - Present
Undergraduate Research Assistant
· Research on quantum computing, power system, smart grid, deep learning, carbon market.

Human Language Technology Laboratory, Shenzhen Research Institute of Big Data 2022.09 - Present
Undergraduate Research Assistant
· Research on brain-like hearing.

Winning Health Technology Group Co.,Ltd. 2022.07 - 2022.09
Algorithm Engineer (Computer Vision)
· Responsible for monocular endoscope 3D reconstruction project.
· Implement 3D reconstruction of gastrointestinal tract based on supervised CNN, Structure from Motion and Marching Cubes Method.
· Participated in the production of the company's science and technology festival promotional video.

Shenzhen Teabreak Network Technology Co., Ltd. 2020.12 - 2022.3
Leader of the back-end development department

· Deeply involved in the development of more than 5 products.
· Led the cooperation of the entrepreneurial team of China University of Political Science and Law.
· Undertook the Halloween promotion activities of JD.com, Inc. in CUHK(SZ).
· The entrepreneurial team with the highest score for the school's incubation base 2021.

AWARDS

National University Student Energy Economy Academic Creativity Competition
· National Outstanding Award (Top 5 in China) 2022.05
· Regional Outstanding Award (Top 2 in Guangdong, Guangxi, Hainan, Hong Kong, Macao and Taiwan) 2022.04

CCF "Sinan Cup" Quantum Computing Programming Competition
· National Second Prize (Top 18 in China) 2022.08

2022 Mathematical Contest in Modeling
· Meritorious Winner (Top 7% of the world) 2022.05

HONORS

2021-2022 Academic Performance Scholarship of The Chinese University of Hong Kong, Shenzhen 2022.12
Undergraduate Research Award of The Chinese University of Hong Kong, Shenzhen 2022.11
2021-2022 Dean's List Honor of School of Data Science 2022.09
Received the offer to the 2022 Summer Program at Pembroke College, University of Cambridge 2022.01
2020-2021 Master's List Award of Muse College 2021.11
2020-2021 Dean's List Honor of School of Data Science 2021.09
Bowen Scholarship of The Chinese University of Hong Kong, Shenzhen 2020.09

EXTRACURRICULAR ACTIVITIES

Undergraduate Student Teaching Fellow of the Discrete Mathematics Course
· Take tutorial courses for students.
· Make out homework questions for students and grade them.
· Answer questions for students during my office hours.

Peer Advisor of the School of Data Science
· Organize orientation activities.
· Organize freshmen to communicate with professors.
· Advice for freshmen's study and life.

Member of the Chinese University of Hong Kong (Shenzhen) Basketball Team
· Participated in the second level of the Chinese University Basketball League.
· Several friendly matches with Shenzhen Technology University, Shenzhen Polytechnic, and Shenzhen Sports School.

INTERESTS, LANGUAGES, SKILLS

Previous Fields of Research:
· Quantum Computing, Deep Learning, Power System, Smart Grid, Computer Vision, Neuromorphic Computing, Carbon Market
Languages:
· English, Mandarin (native)
Skills:
· Python, Pytorch, C++, C, Matlab, Django, MySQL, Linux, Git, CUDA, Latex, Microsoft Office