CHENG CHENG

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Education

Universiti Malaya Mar. 2024 - Present
Master of Science *Kuala Lumpur, Malaysia*

- Data-driven modeling and analysis of infectious diseases

Yuncheng University Sep. 2019 - May. 2023
Bachelor of Mathematics and Applied Mathematics *Yuncheng City, China*

- **Relevant Coursework:** Mathematical Modeling (97%)Mathematical Analysis II(93%) Advanced Algebra(91%)

Activities

DINNs: Dynamics Informed Neural Networks With Application To COVID-19 Infections Dec. 2023 – Present
Working Papers

- Developed a DINNs model that integrates the SEIRV compartment model into deep learning frameworks. This approach enhances traditional epidemic models by incorporating data-driven techniques .
- Applied the DINNs model to real-world data, demonstrating its effectiveness in fitting multiple epidemic waves and predicting future trends.

Estimated Serial Interval and reproduction number of SARS-CoV-2 Omicron variant Dec. 2022 – Mar. 2023
Degree Dissertation

- Demonstrated strong data analysis skills through statistical analysis of Omicron transmission potential, utilizing Python and R for data collection, cleaning, and analysis, and providing recommendations for control measures in a research paper.

Prediction of World Temperature Based on PSO Optimized LSTM Neural Network Nov 2022 – Apr 2023
ICIBA2023

- Utilized advanced machine learning techniques, including PSO-optimized LSTM neural network and sensitivity analysis, to predict global temperature and optimize loss function, demonstrating proficiency in programming languages such as Python and MATLAB.

Research on Identification of Seismic Event Properties Based on LS-SVM Apr 2021 – Jun 2022
Journal of Geodesy and Geodynamics

- Responsible for data collection and analysis, literature review, and drafting the initial paper version.

Research on seismic discrimination based on PSO, GRNN and HHT Sample Entropy Apr 2020 – Jun 2022
Progress in Geophysics

- Contributed to literature review and utilized Python for data mapping, resulting in a model with a 22% improvement over previous models.

Awards

National Second Prize in the National Student Mathematical Modeling Competition 11/2021

Nomination for the Mathematical Modeling Competition in Shanxi Province 04/2022

National Third Prize in the National Student Market Research and Analysis Competition 05/2022

Skills

Software: Python, Matlab, R, SPSS, Latex, Tableau, Origin
Language: Chinese(native), English(fluent)

My name is Cheng Cheng, and I am writing to express my strong interest in joining your esteemed research group as a Ph.D. student. I am currently pursuing a Master's degree in Mathematics at the University of Malaya, focusing on using deep learning for epidemiological modeling.

My passion for infectious disease dynamics began during my undergraduate studies when I participated in mathematical modeling competitions. This experience led me to collaborate with external researchers and learn basic research methods. I also attended conferences and seminars on infectious disease modeling, where I gained exposure to various approaches and learned about fundamental SEIR models.

My academic journey has been centered around infectious disease dynamics. My undergraduate thesis was titled "Estimated Serial Interval and Reproduction Number of SARS-CoV-2 Omicron Variant in Korea." Currently, my Master's project focuses on "Dynamics Informed Neural Networks (DINNs) with Application to COVID-19 Infections." This project was inspired by a course I took on Physics-Informed Neural Networks (PINNs), which prompted me to explore applying these methods to infectious disease prediction. I am eager to combine my mathematical knowledge and programming skills with infectious disease modeling. Although my current experience is limited, I am committed to furthering my education in this field and contributing to the fight against infectious diseases.