Lingfa Meng

Gonville and Caius College, Trinity Street
Cambridge, UK, CB2 1TA

PERSONAL INFORMATION	Mobile: 0044-(0)7107313017 Email: mlf16@tsinghua.org.cn in github

EDUCATION

MMath (Hon), 1st Class Honour (expected)   2021 to 2022
University of Cambridge, Applied Mathematics and Theoretical Physics
Information Theory, Quantum Information Theory, Quantum Computation

BA (Hon), 1st Class Honour   2017 to 2020
University of Cambridge, Experimental and Theoretical Physics
Data Structures and Algorithms, OOP and Programming Paradigms (Java), Functional Programming (ML), Scientific Computing (Python), Numerical Analysis

Degree Level Study   2016 to 2017
Tsinghua University, Hydraulic and Hydropower Engineering
Scientific Computing (C++)

IT

Languages & Software:
Python, Java, MATLAB, Standard ML, LaTeX
Operating Systems: Ubuntu, Windows

ACADEMIC EXPERIENCE

Student Researcher   June 2020 to August 2020
Institute of Theoretical Physics, Chinese Academy of Science
- Solved for the steady state spatial bacteria polarization function for self-propelled magnetotactic bacteria in cylindrical geometry with a constant external magnetic field.
- Applied moment expansion to the bacteria density function in closing the dynamic equation and integrated out the orientational degree of freedom.

Student Researcher   July to September, 2018
Keyser Lab for Biophysics, Maxwell Centre, University of Cambridge
- Performed literature review on DNA structure sensing using Convoluted Neural Networks (CNN) from current time sequences (traces) data in nanopore translocation events
- Optimized an existing generator network for simulating current traces using an discriminator CNN in python with keras by probing the parameter space of the generator network, improving the realistic rate from below 2% to above 10%
- Adapted and implemented RISE (Randomized Input Sampling for Explanation of Black-box Models) for post-training CNN decision interpretation based on Monte Carlo method and improved its efficiency using linear interpolation

INDUSTRIAL EXPERIENCE

Data Science Intern   July to August, 2019
Hitachi Vantara
- Produced UK national CO_2 emission heat map due to traffic by identifying and collecting important open datasets to compute the metric
- Lead a team of three to design and prototype a XML dialect transpiler for XML files in ETL transformation pipelines in Talend and Pentaho

- Learned about NLP algorithms and carried out sentiment analysis on user comments to Pentaho in order to verify the reliability of Gartner Magic Quadrants for data integration tools

Data Science Intern June to July, 2018
Tianjin Research Institute for Water Transportation Engineering,
National Engineering Laboratory for Port Hydraulic Construction
- Researched the needs for a new program to analyse water pressure time sequence for water dam models
- Built a MATLAB data analysing program to calculate the maximum total force and torque from a set of point pressure time sequences for a half moon water dam model

Honours

Awarded by *Gonville and Caius College* July, 2019
Senior Scholarship

Projects

Efficient Ising Model Monte Carlo Simulation
Implemented a parallelized (checkerboard) algorithm for efficient simulation of Ising model in arbitrary dimensions.

Server Administration
Remote hardware maintenance and software deployment for a series of servers based on PVE virtualisation, providing data storage, scientific computing as well as web-hosting service to users.

Languages

English: Fluent
Mandarin: Native
Japanese: Elementary