

Yueting Han

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EDUCATION

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|--|---|---------------------|
| University of Warwick, UK | (MSc leading to PhD) Mathematics of Systems | Sep 2021 - |
| <ul style="list-style-type: none">• Four-year Scholarship covering fees and maintenance stipend funded by EPSRC• Research Interests: Data Science | | |
| University of Liverpool, Liverpool, UK | Bachelor of Science in Mathematics | Sep 2019 - Jun 2021 |
| Xi'an Jiaotong - Liverpool University, China | Bachelor of Science in Applied Mathematics | Sep 2017 - Jun 2021 |
| <ul style="list-style-type: none">• Dual Degree Program• First-class Honours | | |

RESEARCH EXPERIENCE

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| Research Assistant | <i>High-performance Computing Lab of Tsinghua University</i> | |
| <u>Research on Artificial Intelligence Computational Fluid Dynamics</u> | | Jun 2021 - Sep 2021 |
| <ul style="list-style-type: none">• Created data sets of flow around a circular cylinder on OpenFOAM and visualized them using ParaView• Designed algorithm for sampling point cloud center through measuring path-length in the mesh generated by OpenFOAM• Performed validation with Boundary Layer Code for Computational Fluid Dynamics on MATLAB | | |
| <u>Research on Parallel Implementation of LBM Computing Fluid Dynamics Simulation</u> | | Aug 2019 - Sep 2019 |
| <ul style="list-style-type: none">• Designed parallel algorithms to optimize the LBM Computing Fluid Dynamics Simulation and improved the performance by 172 times• Developed separate data modules with C++ to implement parallel optimization schemes• Developed data interaction module with C++ to process inter-process communications• Specified and tested the boundary conditions of data modules according to certain algorithms | | |
| <u>Data Processing of LBM Computing Fluid Dynamics Simulation</u> | | Jan 2019 |
| <ul style="list-style-type: none">• Conducted literature research on LBM Computing Fluid Dynamics Simulation and created dataset from various graphs using Plot Digitizer• Filtered and sorted calculated simulation results with Java Programming and Excel for more comprehensive and accurate data analysis• Further processed the data with MATLAB by applied Fourier Transform to calculated simulation results• Performed validation with obtained dataset by constructing graphs with MATLAB | | |

PROJECTS

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| Face Recognition Using Support Vector Machines | May 2021 |
| <ul style="list-style-type: none">• Converted images of two individuals into vectors containing training points and label them with -1 and 1 respectively• Formulated training points and their labels into the convex quadratic optimization problem• Obtained the maximum margin separating hyperplane through relevant built-in function in MATLAB Optimization tool• Classified new images according to the hyperplane | |
| Breaking Permutation Ciphers Using Markov Chain Monte Carlo | Apr 2021 |
| <ul style="list-style-type: none">• Extracted key information of deciphering from Tolstoy's <i>War and Peace</i>• Obtained the most plausible permutation through MATLAB implementation of the Metropolis-Hastings algorithm according to the key information and associated plausibility• Decrypted and output the ciphertext with the permutation | |

Quadrature

Apr 2020

- Derived Newton-Cotes Quadrature that was based on evaluating the integrand at equally spaced nodes, including Trapezium Rule, Simpson's Rule and Five Point Rule
- Formulated the overall leading order absolute error and estimated the impact of adjusting the distance between each pair of nodes which were at even distance
- Studied Gaussian Quadrature with interpolatory on optimally chosen point sets to further improve the accuracy
- Evaluated the performance of each method and validated the obtained results by programming in Maple with the accuracy of results prioritized

Root-finding for Nonlinear Equations

- Found roots with bisection method, false position method, secant method and Newton-Raphson method
- Tested and validated the results of each method
- Evaluated the performance of each method from the aspects of applicability, generality and rate of convergence
- Performed validation on the analysis by programming in Maple with the accuracy of result prioritized

Transportation Problem

Oct 2019

- Utilized transportation table to minimize the cost of distributing the commodity from a number of sellers to a number of buyers
- Studied the balanced transportation problem with the transportation table by finding an initial basic feasible solution, and checking for optimality and improvement
- Obtained the method to solve an unbalanced transportation problem by introducing one more seller or buyer, which was based on the approach to solving a balanced problem
- Evaluated and verified the effectiveness of the method which minimizes the cost through introducing theorems about spanning tree

Garden Game

Apr 2019

- Developed a game with Java in Netbeans for players to plant flowers in a garden
- Designed a user interface to choose the types of flowers and the planting pattern
- Developed modules to import images of flowers and flowerbeds and to display the growth of flowers

SKILLS

Programming Languages: Java, C++, Python

Tools: MATLAB, Maple, Minitab, SPSS, OpenFOAM, ParaView, Plot Digitizer

IELTS & GRE SCORES

IELTS: 7.5 overall in 2019

GRE: Quantitative Reasoning 170 & Verbal Reasoning 152 in 2020

VOLUNTEER EXPERIENCE

- As a volunteer leader for Five Universities League Activity, organized the campus tour and the game session
- Volunteered to provide mentoring and campus tour for Overseas Buddy Activity
- Volunteered to provide mentoring for XJTLU's Independent Recruitment of Students