**Yueting Han**

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**EDUCATION**

**University of Warwick, UK** (MSc leading to PhD) Mathematics of SystemsSep 2021 -

* 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

* Dual Degree Program
* First-class Honours

**RESEARCH EXPERIENCE**

**Research Assistant** *High-performance Computing Lab of Tsinghua University* Aug 2019 - Sep 2019

Research on Parallel Implementation of LBM Computing Fluid Dynamics Simulation

* 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

**Research Assistant** *High-performance Computing Lab of Tsinghua University* Jan 2019

Data Processing of LBM Computing Fluid Dynamics Simulation

* 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**

**Face Recognition Using Support Vector Machines** May 2021

* 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

* Extracted key information of deciphering from Tolstoy’s *War and Peace*
* 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 bisector method, false position method, secant method and Newton-Raphson method Mar. 2020
* 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

**Analysis of Predator-Prey Interaction**  Jun 2019

* Made assumptions about the environment and evolution of the predator and prey populations, such as the prey were assumed to have an unlimited food supply
* Built Lotka-Volterra model to predict the size of the predator and prey populations
* Found and classified equilibria using nullcline diagram and obtained the corresponding phase portrait
* Investigated the model by fitting it to the dataset of population figures

**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, Plot Digitizer,Microsoft Excel

**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 Jun 2019
* Volunteered to provide mentoring and campus tour for Overseas Buddy Activity Sep 2018
* Volunteered to provide mentoring for XJTLU's Independent Recruitment of Students Nov 2017