

Chunyang Wang

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Education

Imperial College London, UK

Oct. 2022 – Oct.2023

- **Degree:** MSc in Applied Computational Science and Engineering.
- **Grade:** Distinction.
- **Correlated curriculum:** Computational Mathematics, Modelling and Numerical Methods, Inversion and Optimisation, Inversion and optimisation, Parallel Programming, Deep Learning, Data Science & Machine Learning, Modern Programming methods(CI/CD, Testing).

Southwest University & The University of Auckland, China

Sep. 2018 – Jun. 2022

- **Degree:** BEng in Computer Science and Technology.
- **Grade:** 87.34/100 (3.85/5.0), **Ranking:** 10/129, **Award:** Outstanding Graduate
- **Correlated curriculum:** Artificial Intelligence, Numerical Analysis, Linear Algebra, Advanced Mathematics, Data Structure, The Design Analysis of Computer Algorithms, Object Oriented Programming (C++), Probability and its applications, Statistical Theory.

Research/Work Experience

Research Assistant – Imperial College London

Nov. 2023 – Present

- Under the supervision of Dr. Stephan Kramer and Professor Matthew Piggott, advancing previous dissertation work conducted at Imperial College London, with a focus on leveraging Machine Learning techniques to improve mesh generation for Partial Differential Equation (PDE) solving.
- Innovating in mesh refinement and movement strategies, exploring physics-informed and neural operator-based approaches.
- Establishing the research codebase and overseeing Git repository management to ensure a streamlined and collaborative workflow, conducted literature review to explore effective methods to contribute to the research team.

Software Engineer Intern – iFlytek

Jul. 2021 – Jan. 2022

- Contributed to the software development of iFlynote, a user-friendly note-taking application, with responsibilities including application interface implementation and design/implementation of the backstage administration system.
- Engaged in agile development practices, including intensive Git operations and code merging, successfully completing over 50 Jira tasks and distributing more than 10 new versions of the backend system using CI/CD tools.
- Conduct data analysis on the collected from the constructed backstage administration system, present insights for R&D in group meeting.

Publication

[Comparative study on deep learning models in humor detection](#)

Mar. 2021

- Published on the SPIE (2021 International Conference on Neural Networks, Information and Communication Engineering).

- Employed both regression and classification methods to identify the optimal model, and explored the performance of CNN, RNN, and BiLSTM in humor detection tasks.
- Authored the research methods and abstract sections of the project paper, contributing to its successful review and publication.

[MobileNet investigation: its application and reproducing edge detectors using depth-wise separable convolution](#)

May. 2021

- Published on the IEEE Xplore (ISSN: 2021 ICMLCA 2021).
- Carried out experiments to examine depthwise separable convolution's ability in terms of reproducing edge detector kernels, visualisation of depth-wise separable convolution kernel.
- Compared three models, including InceptionV3, ResNet50, and MobileNetV2, on face mask detection tasks.
- Authored the abstract and methods sections of the project paper, contributing to its successful publication.

Research Projects

[Adaptive mesh movement utilizing ML technique, Imperial College London](#) Jul. 2023 – Oct.2023

- **Applied expertise:** Finite Element Method (FEM), Graph Attention Neural Network (GAT), Scientific Programming.
- Focus on the development of a machine learning r-adaptivity method to generate optimized meshes, providing a more efficient alternative to computationally prohibitive traditional mesh generation methods used in the Finite Element Method (FEM) for solving discretised PDE problems.
- First to reveal existing method limitations by introducing a challenging dataset with an increased proportion of anisotropic mesh cells, causing mesh tangling in current models.
- Designed a new GAT and RNN based model - Mesh Recurrent Network (MRN), which learn the desired mesh geometry progressively, mitigating tangling issue significantly (especially when handling anisotropic meshes). Compared to existing models, the MRN exhibits superior generalization capabilities and explainability.

[Armageddon: An asteroid impact solver \(Group project At Imperial College London\)](#) Nov. 2022

- **Applied expertise:** Python programming, scientific programming, and data analysis using pandas and numpy.
- Developed a software program capable of predicting the trajectories of small asteroids entering Earth's atmosphere, providing hazard maps for potential impacts over the UK. This tool is designed for use in emergency response and evacuation planning.
- Designed and implemented solvers based on the 4th-order Runge-Kutta and Forward-Euler methods to predict the behaviour of impacting asteroids.
- Developed a damage mapper to extract geographical and population data from datasets, enabling the estimation of potential impact damage. Utilize profiler to track the performance of the software and improve the performance of the programme.
- Constructed a user-friendly GUI which allows user to interact with the solver in a web browser.
- Managed the Git repository, composed CI/CD scripts using GitHub workflows, designed unit tests, and created comprehensive documentation.

[C++ 3-D Image processor \(Group project At Imperial College London\)](#)

Mar. 2023

- **Applied expertise:** C++, GNU Make (makefile writing), Git, Doxygen.

- Developed an image processing software from scratch, relying solely on stb_image for image I/O, without the use of any other external libraries.
- Applied a paging strategy to optimize the program, enabling it to process large datasets on systems with limited memory.
- Initiate the skeleton of the codebase and compose a makefile that helps compiling and testing.
- Design and implement Image and Filter class for the programme, optimizing image filtering/scanning algorithm.
- Design unit test utilising cmake and run performance test on the software, technical report writing.

Extracurricular

Class Representative, Imperial College London, ESE Department Oct. 2022 – Oct. 2023

- Conducted comprehensive surveys to gather student feedback, performed data analysis on the responses, and presented the findings to course directors and staff to facilitate improvements in course delivery.
- Organized three departmental social events, managing all aspects including venue booking, staff and teaching assistant invitations, and the preparation of food and beverages.

Secretary, Students Union of SWU School of Computer and Information Science Sep. 2018 – Jul. 2019

- Spearheaded and participated in significant IT activities at the school level, including the “IT Culture Festival”, “WeChat Mini Program Competition”, and “ACM School Competition”.
- Successfully organized the 'IT Culture Festival', a large-scale event that attracted participation from over 2,000 individuals."

Certificates and Award

- [Machine Learning Specialisation](#) (By Coursera and Stanford University) Aug. 2022
- Outstanding Graduate of Southwest University in 2022 May. 2022
- 2021-2022 Academic Year Advanced Individual “Spiritual Civilization Award” May. 2022
- 2020-2021 University-level Scholarship of SWU Dec. 2021
- 2019-2020 University-level Scholarship of SWU Dec. 2020
- 2018-2019 University-level Scholarship of SWU Dec. 2019
- Third Prize of Asia and Pacific Mathematical Contest in Modelling in Asia-Pacific Region Nov. 2020
- 2018-2019 Academic Year Advanced Individual “Labour Practice Award” May. 2019
- Third Prize in the 2019 Computer Design Contest for China College Students in Chongqing May. 2019

Technical Skills

- Scientific programming (NumPy, SciPy, MATLAB, C++)
- Machine learning Programming (Pytorch, scikit-learn)
- DevOps (Linux, Nginx...)
- Software Development (JavaScript, Basic TypeScript, XML, CSS, React.js, Vue.js, Node.js)