


## Peter HU

University of Cambridge |  **Jardine Scholar**  
Computer Science Part IA

## CONTACT

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 [LinkedIn](#) |  [Github](#) |  [Portfolio](#)

What I really enjoy is the beauty of CS and its application in real life. I am open to new fields of area and enjoy exploring unknown features.

## SKILLS

**Basic Skill** · C · C++ · Java · OOP · CMake · Gdb · Algorithms and Data Structure · Functional Programming (OCaml)  
**Operating System** Process Scheduling, Memory (Segment, Page, VM), I/O, File, Linux · bash/shell · Digital Electronic  
**Data Sci** · Python · NumPy · Machine Learning · Deep Learning · Natural Language Processing · Computer Vision  
**Graphics** · Vulkan · Graphics Pipeline · GPU driver · Game Engines/ Unreal Engine Unity · C#  
**Front-End** · HTML/ CSS · React · Flutter · Latex **Back-End** · Database · SQL · NoSQL  
**Math** · Calculus · Linear Algebra · Discrete Math · Probability and Statistics · Abstract Algebra · Topology (basic)  
**Development Tools** git (Version Control), CI/CD pipeline, Docker, Visual Studio, VS Code, Pycharm, Github/Gitlab, IntelliJ IDEA.

## WORK EXPERIENCE

**Kirin Software Solutions Team, Huawei Technologies R&D (UK) Ltd, Cambridge** Internship Dec 2022 - Present  
**Graphics Researcher** May 2023 - Present

- Finding the "Secret Sauce" of the Next-Generation Development, which is really exciting!
- Conduct independent Computer Graphics research, involving scientific paper and literature reading, of both the classic and novel algorithms. Implement and verify such algorithms with comparisons.
- Assist the research team with setting up the simulation environment, conducting the investigation and data analysis.
- Series Knowledge sharing sessions about my research topic, with detailed and self-contained material. (Presentation slides over 120.)

**GPU Software Engineer** Dec 2022- May 2023

- C++, CMake, Gdb, Git version control, CI/CD pipeline, CMake, hands-on experience on Linux server, etc.
- Introducing independent full automation tools in the project, reducing error rate to nearly 0%. [Tool](#)
- Familiar with workflow of GPU industry, Vulkan graphics API; Projects on *GPU driver* and verification, Game Engines (UE4).
- Working and collaborating with colleagues, like helping fixing C++ build or link errors.

## EDUCATION

**University of Cambridge** Computer Science, Undergraduate Oct 2022- Present  
· Merit-based, fully funded Jardine Scholarship

**Xiamen University** Software Engineering, Undergraduate(First Year) Sep 2021-June 2022  
Top 1 academic institution in Southern China, Double First-class University, Project 985, 211.  
· GPA: 3.91 / 4.0, rank 1 / 173 (first term), 88/100 (overall) · Class Rep, ACM Team training.

**Nanyang Model High School** Sep 2018-June 2021  
· Physics Rep, Leader of a research project. · Awarded ShuPing Scholarship twice

## HONORS AND AWARDS

**UK Tech Arena Gold Medal** with £7000 [C and C++, Compression, Concurrent] 10 Oct-26 Nov 2022

**Engineering + Research** Learning from scratch in a month, digesting lots of papers and source code available, like RFC1951, etc.

- Responsible for implementation & improvement of LZSS. Engaging in pre-processing, serialization with teammates.
- Optimization using C pointers, bitwise operators & hash tables. GPU optimization: Branch Prediction.
- Multi-threading, Parallelization, Concurrent Processing. [Project](#) | [Blog](#)
- In a team of 4, Leading the team and communicate with other teammates.

**Top 2 Team in Mercuria Hackathon 2022** [Python, Data Analysis, Route-Planning] 16 Dec-18 Dec 2022  
Using data analysis to accelerate the energy transition and reduce the carbon emissions of the maritime industry.  
· Networking and collaborating with senior engineers, excellent undergraduate, Master and PhD students from all around the Europe.

**Jardine Scholarship**, issued by Jardine Foundation Feb 2022  
Merit-based, fully-funded Scholarship during my Undergraduate at University of Cambridge

**Adolescents' Science and Technology Innovation Contest Third Place** Apr 2020

**Research + Thesis** issued by Shanghai Association for Science and Technology, Shanghai Municipal Education Commission

- Deep research into the phenomenon of tire-locking, including why it may happen and its pros and cons using Force Analysis.
- Introduced the Anti-lock braking system into our research by our mentor. Self-made physical simulation test for tire-locking.

**Accepted for Publication Twice** [English Essays in Shanghai Student Post] Oct 2018, May 2019  
· Topic: Effective Ways to Overcome Obstacle in Study, Campus Life without Snack Stores.

## PROJECTS AND ASSIGNMENTS

**Operating System [MIT 6.S081]** [Project](#) Oct 2022 -Mar 2023

- Programming in kernel mode and user mode of Unix Version 6 (v6), implemented for a modern RISC-V multiprocessor.
- Implement Unix utilities functions, System Call. Understanding its Process Scheduling, Memory (Segment, Page, VM), I/O, File.

**Database Design Project (C++) [CMU15-445 Project]** [Project \(Github\)](#) | [Blog](#) Aug-Oct 2022

- Memory Management, including Buffer Pool Management System, Replacement policy: LRU
- Concurrency: implement the Parallel Buffer Pool Manager.
- Engineering and code style: Using C++ STL, Google C++ Style Guide

**Computer Graphics (C++, OOP, OpenGL) [MIT6.837 Assignment]** [Project](#) | [Blog](#) Jul-Sep 2022

- Ray casting, normal visualization, rendering, voxel rendering, super sampling and 3D
- Huge OOP project, with 3D objects, light, camera classes. Building over 20 C++ source files from scratch.
- Composite design pattern for 3D objects class hierarchy with transformation.

**Machine Learning and Real-world Data (Python) [Cambridge Part IA]** [Project \(Github\)](#) | [Blog](#) Jan-Mar 2023

- Text Classification using ML with improvements, including Naive Bayes classifier, Cross-Validation, NLP, HMM



## INTEREST AND EXTRACURRICULAR ACTIVITIES

Music, Yoga, Gym, Helping others etc. | Society Joined: Ethics in Mathematics | Macro & Micro, Money Banking

## Appendix A: Other Interesting Projects

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The following Projects are either individual or collaborated, as grouped by corresponding fields.

### Engineering + Research

- LZSS with Concurrent Demo @ UK Tech Arena 2022** [Project](#) 10 Oct-26 Nov 2022
- A nicer and easy-to-follow way of understanding FastLZ77
  - With improved 6-level / concurrent LZSS Compression in different branches
  - With step-by-step explanation, with help from *RTC1951*, breakpoint debugging feature and inspecting the related variables.

### AI and Data Science (Python)

- Artificial Intelligence** [Stanford CS229] [Project \(Github\)](#) Oct 2022 - Present
- Linear classifiers (Logistic Regression, GDA), Stochastic Gradient Descent, L1 L2 Regularization, SVM
- Computer Vision** [Stanford CS231n] [Project \(Github\)](#) Jan 2023 - Present
- Python, Numpy, kNN, Softmax, SVM classifier, Cross Validation

### C, C++, OOP

- Multifunctional Supermarket Management System** [C++, OOP] [Project](#) | [Blog](#) Apr 2022
- Inheritance, polymorphism (Operator Overloading); Read/Write Files, etc
- Typing Game (C & EasyX)** [Project \(Github\)](#) | [Blog](#) Dec 2021

### Utility Tools

- URL Finder** [Web Crawler, Python, Go] [Project](#) Apr 2023
- Download the web page available at the input URL and extract the URLs of other distinct pages linked to from the HTML source code.
- Data Structure: Lists, Sets; Computer Networking: HTTP request, like get; Synchronous File IO

The below two are Open-Source Utility Tools @ Huawei Internship

- Removal Tools** [C, C++, Linux, IO] [Tool](#) Mar 2023
- Introducing independent full automation tools in the project, reducing error rate to nearly 0%.
  - Integration of search, view and delete using Linux System Call ack, vim and sed.
  - In addition, there are others Linux system calls integrated, like clear screen.
  - Handling Asynchronous operation, like deletion and IO. Following Linux Tool UI and branching design.
- Parsing Trace File** [Java, Trace, Parser, IO] [Project](#) May 2023
- Parsing Trace File and generate a unique and sorted list.

### Frontend, backend

- Weather App** [UI, Flutter, OOP, API] (Group Project) [Project](#) April – May 2023
- Collaborating with team members on an App integrating weather forecast with daily calendar events. I am responsible for:
  - Frontend: Beautiful design with well-decorated UI components, written in Flutter, with Object-oriented programming.
  - Backend: Integration of iCalendar API, asynchronous IO, Computer Networking: HTTP request, like get.
- Personal Website and Blog** [React, HTML, CSS] <https://peterhuistyping.github.io> Aug 2022
- Built up from scratch using HTML/ CSS · Deployed by React to enable high code reuse.

### Game Dev

- Priest-Beneath** [Unity, C#] [Project \(Github\)](#) | [Blog](#) | Play with web deployment: [More](#) Feb 2023
- Unity C# GAME Group Project (2023 Cambridge Game Jam)

### Algorithmic Trading

- Optiver Go 2023** [C++, Python] Mar 2023
- Introduction to trading with buy side and sell side. Implement pair-wise trading strategies as an optimal solution.

## Appendix B: Reference

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**Haoran Jie** [in](#) · 1st

Cambridge Computer Science Undergrad | Intern @ Huawei R&D | Spring Intern @ J.P. Morgan, BoFA, & Bp  
May 5, 2023, Haoran worked with Peter on the same team

During our time working together, I found Peter to be a highly collaborative and supportive colleague who consistently demonstrated a willingness to share his knowledge and expertise with others. Peter's ability to problem-solve complex c/c++ development issues was invaluable, and his commitment to learning and staying up-to-date with the latest advancements in his field is truly impressive. His passion for ray-tracing is contagious, and I have learned so much from his knowledge sharing.

Source: [in LinkedIn](#)