


Peter HU

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

CONTACT

✉ zh369@cam.ac.uk | ☎ (+44) 07990719841
 [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 · OCaml (Functional Programming)
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 · Interaction Design · Back-End · Database · SQL · NoSQL
Others · OS · Digital Electronic · Software Engineering · Design Patterns · Security
Math · Calculus · Linear Algebra · Discrete Math · Probability and Statistics · Abstract Algebra · Latex · Topology (basic)
Dev Tools bash/shell, git (Version Control), CI/CD pipeline, Docker, VS, VS Code, Pycharm, 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 C++, CMake, Gdb, Git, CI/CD pipeline, CMake, hands-on coding on Linux server Dec 2022- May 2023

- 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

Personal Website and Blog [React, HTML, CSS] <https://peterhuistyping.github.io> Aug 2022

- With Project blogs, related files and so on. · Built up from scratch using HTML/ CSS · Deployed by React to enable high code reuse.



INTEREST AND EXTRACURRICULAR ACTIVITIES

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

Appendix A: Other Interesting Projects

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.

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



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](#)