Peter HU   zh369@cam.ac.uk | (+44) 07990719841 | [LinkedIn](#) | [Github](#) | [Portfolio](#)

University of Cambridge | Jardine Scholar | Technical Solutions Provider | Researcher

TECHNICAL 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
Skills: 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.

EXPERIENCE

GPU Architecture/Algorithm Researcher: Huawei Research Lab, Cambridge   Jun 2023-Present
- Implement and compare Real-time graphics algorithms. Hands-on experience on Modelling and setting up Simulation environment. series Knowledge-Sharing sessions about my research topic. Details

GPU Software Engineer: Huawei Research Lab, Cambridge   Dec 2022-May 2023
- C++, CMake, Gdb, Git, CI/CD pipeline, CMake, hands-on coding on Linux server
- Introducing independent full automation tools in the project, reducing error rate to nearly 0. Tools
- 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. Details

EDUCATION

Computer Science, BA   Graduating June 2025
University of Cambridge, UK   67% (Provisional Marks)
Operating System, Computer Architecture, Solid Mathematics

Software Engineering, BE   Sep 2021-June 2022 (First year)
Xiamen University (Top 1 in Southern China, Project 985.)   First Term 3.91 / 4.0, rank 1 / 173 , Overall 88/100
C and C++, Object-Oriented Programming, Calculus and Linear Algebra, ACM, SSE

HONORS AND AWARDS

LZSS with Concurrent Demo @ UK Tech Arena 2022 Gold Medal   10 Oct-26 Nov 2022
Learning from scratch in a month, digesting lots of papers and source code available, like RFC1951, etc.
- Responsible for implementation & improvement of LZSS. 6-level / concurrent LZSS Compression. Project
- Multi-threading, Parallelization, Concurrent Processing. Details.

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 Europe.

Jardine Scholarship   During Undergraduate
Merit-based, fully-funded Scholarship during my Undergraduate at University of Cambridge.

Adolescents' Science and Technology Innovation Contest Third Place   Apr 2020
issued by Shanghai Association for Science and Technology, Shanghai Municipal Education Commission
- Deep research into the phenomenon of tire-locking, including pros and cons using Force Analysis. Thesis writing.
- Introduced Anti-lock braking system into our research by our mentor. Self-made physical simulation test.

Accepted for Publication Twice   Oct 2018, May 2019
Topic: Effective Ways to Overcome Obstacle in Study, Campus Life without Snack Stores.

PROJECTS AND ASSIGNMENTS (SEE APPENDIX FOR MORE)

Computer Graphics (C++, OpenGL)   Jul-Sep 2022
Composite design pattern for 3D objects class hierarchy with transformation.
- Ray casting, normal visualization, rendering, voxel rendering, super sampling and 3D. [MIT6.837 Project](#) | [Blog](#)
- Huge OOP project, with 3D objects, light, camera classes. Building over 20 C++ source files from scratch.

Machine Learning and Real-world Data (Python)   Jan-Mar 2023
Text Classification using ML with improvements
- Naive Bayes classifier, Cross-Validation, NLP, HMM. [CamIA Project](#) | [Blog](#)

Personal Website and Blog(React, HTML, CSS)   Aug 2022
https://peterhuistyping.github.io
- Project blogs, related files, etc. Built up from scratch using HTML/ CSS. Deployed by React, with high code reuse.

INTEREST AND EXTRACURRICULAR ACTIVITIES

Logic and Proof | Music, Yoga, Gym,etc. | Society Joined: Ethics in Mathematics | Macro & Micro, Money Banking

APPENDIX A: FULL LISTS OF INTERESTING PROJECTS

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

Engineering + Research

Details. **LZSS with Concurrent Demo @ UK Tech Arena 2022 Gold Medal**   10 Oct-26 Nov 2022

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

- Responsible for implementation & improvement of LZSS. 6-level / concurrent LZSS Compression. Project
- Step-by-step explanation, with help from RTC1951, breakpoint debug and inspect the related variables.
- Engage 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.

System

Operating System (MIT 6.S081)   Oct 2022 -Mar 2023

issued by Shanghai Association for Science and Technology, Shanghai Municipal Education Commission

- Program in kernel mode and user mode of Unix Version 6 (v6), implemented for a modern RISC-V multiprocessor.
- Implement Unix utilities, System Call. Process Scheduling, Memory (Segment, Page, VM), I/O, File. xv6

Database Design Project (CMU15-445 Project)   Aug-Oct 2022

Engineering and code style: Using C++ STL, Google C++ Style Guide

- Memory Management, including Buffer Pool Management System, Replacement policy: LRU
- Concurrency: implement the Parallel Buffer Pool Manager. CMU15-445 Project | Blog

Skills: Vulkan , Graphics Pipeline , GPU driver , Game Engines/ Unreal Engine Unity , C#

Details. **GPU Architecture/Algorithm Researcher: Huawei Research Lab, Cambridge**   Jun 2023-Present

- 1. Implement and compare Real-time graphics algorithms. Design various tree data structures from literature and self-exploration, visualisation (json) and algorithms, like bfs, dfs, etc. Implement compute shader program for performance optimisation, considering micro-architecture implementation trade-off.
- 2. Hands-on experience on Modelling and setting up Simulation environment. Simulate real-time rendering scene of million triangles. Use of Graphics Analysers for performance measurement, RenderDoc for GPU debugging. Unit Tests from Google Test framework, Python data analysis.
- 3. Consider CPU concurrent implementation using OpenMP, memory synchronisation between CPU and GPU, texture, shader, etc.
- 4. Acquire knowledge from Open-Source library and industry standards. For instance, proper CMake structure, conditional branches using C++ macro for platform-neutral design (Windows, Linux), document class relationship and other details using Doxygen.
- 5. Meanwhile, host series Knowledge-Sharing sessions about my research topic. Prepare detailed and self-contained material. (Presentation slides adding up to 120.) Sharing sessions last around 3 hours in total. Also gain insight from the feedback of participants.

AI and Data Science (Python)

Artificial Intelligence   Oct 2022-Present

CS229 Project

- Linear classifiers (Logistic Regression, GDA), Stochastic Gradient Descent, L1 L2 Regularization, SVM.

Computer Vision   Jan 2023 -Present

CS231n Project

- Python, Numpy, kNN, Softmax, SVM classifier, Cross Validation.

Utility Tools

URL Finder (Web Crawler, Python, Go)   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. URL Finder

- Data Structure: Lists, Sets; Computer Networking: HTTP request, like get; Synchronous File IO

Details **Removal Tools @ Huawei Internship (Linux)**   Mar 2023

Introducing independent full automation tools in the project, reducing error rate to nearly 0% Tools

- 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   May 2023

Parsing Trace File and generate a unique and sorted list. Parser

- Java, Trace, Parser, IO

Frontend, backend

Weather App (UI, Flutter, Group Project)   April May 2023

Collaborating with team members on an App integrating weather forest with daily calendar events. I am responsible for:

- Frontend: Beautiful design with UI components, written in Flutter, with Object-oriented programming.
- Backend: Integration of iCalendar API, asynchronous IO, Computer Networking: HTTP request, get. [Project](#)

C, C++, OOP

Multifunctional Supermarket Management System   Apr 2022

Using data analysis to accelerate the energy transition and reduce the carbon emissions of the maritime industry.
- Inheritance, polymorphism (Operator Overloading); Read/Write Files, etc [Project](#) | [Blog](#)

Typing Game (C & EasyX)   Dec 2021

A standard keyboard layout, where different modes are provided. [Project](#)

Game Dev

Priest-Beneath (Unity, C#)   Feb 2023

Unity C# GAME Group Project (2023 Cambridge Game Jam).
- [Project](#) | [Blog](#) | Play with web deployment: [WebGL](#)

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

"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: [LinkedIn](#)