

## TECHNICAL SKILLS

**Prog:** 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

**System:** OS , Arch , Software Engineering, Design Patterns , Security , Digital Electronic

**Math:** Calculus , Linear Algebra , Discrete Math , Probability and Statistics , Abstract Algebra , Latex , Topology (basic)

**Full-stack:** Front-End: HTML/ CSS , React , Flutter , Interaction Design , Back-End : Database , SQL , NoSQL

**Dev Tools:** bash/shell, git, CI/CD pipeline, Docker, VS, VS Code, Pycharm, IntelliJ IDEA.

## EXPERIENCE

Research Intern: GPU / Graphics Algorithm

Jun 2023-Present

- Mathematical approach: Linear Algebra, error analysis. Ensure IEEE fpp robustness and Vulkan CTS watertightness.
- Algorithm approach: Proper data structure and traversal logic. Target micro-benchmarks, cache hit rate.
- Data Science: NN training and inference, 3D Data Encoding, shuffling data, loss functions etc (compressed data over 5GB).
- Key developer for simulation framework. Host sharing sessions. [Details](#)

Research Intern: CPU Architecture

Jun-Oct 2023

- Research into CPU Scheduling, DVFS policy, Idle Management in terms of energy efficiency. Convex Optimisation, Duality, LP, Pareto Optimality, Stanford CVX101, Online Algorithms, Competitive Analysis, Disjoint Set Union-find, etc.
- Set up simulation platform, event-driven architecture with state machine, taking in runtime profiled task model. Compare different algorithms w.r.t complexity, performance, energy (temperature, thermal), Memory Contention, floor-plan, applications. Python (Numpy, Matplotlib, Networkx, Pandas, DAG, TopologicalSorter, etc).

@ Cambridge Research Lab, Huawei

## EDUCATION

University of Cambridge, UK

Graduating June 2025

Computer Science, BA

67.5%(Strong Upper Second)

Merit-based, fully-funded Jardine Scholarship

Xiamen University, Top 1 in Southern China, Project 985

Sep 2021-June 2022

Software Engineering, BE First year

rank 1/173 first term, 88/100 overall

C and C++, Object-Oriented Programming, Calculus and Linear Algebra, ACM, SSE

## HONORS & AWARDS

Gold Medal, 3D data compression algorithm, @ UK Tech Arena

10 Oct-26 Nov 2022

Engineering + Research, digesting papers and source code, like RFC1951, etc.

- Responsible for implementation & improvement of LZSS. 6-level / concurrent LZSS Compression. 🌀
- C with bitwise operators & hash tables, optimization via branch prediction and concurrency.
- In a team of 4, leading the team and engaging in pre-processing, serialization with teammates.

Top 2 Team, Maritime Data Science, @ Mercuria Hackathon

16 Dec-18 Dec 2022

Using Python regression for Route-Planning and reduce the carbon emissions of the maritime industry.

Third Place, High school Science and Technology Innovation Contest, @ Shanghai

Apr 2020

Deep research thesis into the phenomenon of tire-locking, including pros and cons using Force Analysis

- Self-made physical simulation test. Introduce Anti-lock braking system into our research with help from mentor.

Participant, Chinese Physics/Mathematical Olympiad (ChPO, CMO)

Oct 2019

Publication twice on Shanghai Students' Post

Oct 2018, May 2019

Topic: Effective Ways to Overcome Obstacle in Study, Campus Life without Snack Stores.

## PROJECTS (MORE IN APPENDIX)

Graphics Renderer (C++, OpenGL)

Jul-Sep 2022

Real-time simulation. Composite design pattern for 3D objects class hierarchy with transformation.

- 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.

Machine Learning and Real-world Data (Python)

Jan-Mar 2023

Text Classification using ML with improvements

- Naive Bayes classifier, Cross-Validation, NLP, HMM. 🌀 | 📄

🏠 Personal Website and Blog (React, HTML, CSS)

Aug 2022

Project blogs, files, etc. Built up from scratch using HTML/ CSS. Deployed by React, with high code reuse.

## INTEREST & EXTRACURRICULAR ACTIVITIES

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

## APPENDIX: FULL LISTS OF INTERESTING PROJECTS

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

### System

Research Intern: GPU / Graphics Algorithm [^](#)

Jun 2023-Present

- Real-time renderer simulation(OpenGL, GLSL, ImGui, etc). GPU Debugging (RenderDoc), Unit Tests (Google Test framework), Performance Measurement (Graphics Analysers)
- CPU concurrent programming (OpenMP), CPU-GPU memory synchronisation (via texture, UBO, SSBO), etc.
- Follow open-source library and industry standards. e.g., proper CMake structure, platform-neutral design (macro), class UML document (Doxygen).

Operating System (MIT 6.S081)

Oct-Dec 2022

*Program in kernel mode and user mode of Unix V6 RISC-V multiprocessor*

- Implement Unix utilities, System Call. Process Scheduling, Memory (Segment, Page, VM), I/O, File. [🔗](#)

Database Design Management System (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. [🔗](#) | [📄](#)

### AI and Data Science (Python)

Artificial Intelligence

Oct 2022-Present

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

Computer Vision

Jan 2023-Present

- 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.*

- Data Structure: Lists, Sets; Computer Networking: HTTP request, like get; Synchronous File IO. [🔗](#)

Trace File Parser [🔗](#)

May 2023

*Parsing Trace File and generate a unique and sorted list in Java.*

### C, C++, OOP

Multifunctional Supermarket Management System

Apr 2022

*Inheritance polymorphism Operator Overloading*

- Read/Write Files, etc [🔗](#) | [📄](#)

## APPENDIX: REFERENCE

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"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