

**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 AND AWARDS**

Compression algorithm Gold Medal

*@ 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. [Project](#)
- 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.

Maritime Data Science Top 2 Team

*@ Mercuria Hackathon*

16 Dec-18 Dec 2022

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

- Networking and collaborating with senior engineers, excellent students from Europe.

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 on Students' Post

Oct 2018, May 2019

*Topic: Effective Ways to Overcome Obstacle in Study, Campus Life without Snack Stores.***PROJECTS AND ASSIGNMENTS (SEE APPENDIX FOR MORE)**

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. [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

*Project blogs, 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 &amp; 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. [xv6](#)

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. [CMU15-445 Project](#) | [Blog](#)

### AI and Data Science (Python)

Artificial Intelligence [CS229 Project](#) Oct 2022-Present

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

Computer Vision [CS231n Project](#) 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 [Project](#) | [Blog](#)

## 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](#)