

## SUMMARY

An enthusiastic learner skilled in algorithms and implementation, with experience in HPC-related technologies. Eager to learn and try out new technologies.

## EDUCATION

*University of Oxford* – Master of Mathematics and Computer Science

Oct '21–Jun '25

Second place in the examinations in year 2021/22

(expected)

Related coursework: algorithms and data structures, machine learning, concurrency, multidimensional numerical computation, computer architecture, etc.

Receiving a scholarship from Yanai Tadashi Foundation

*University of Tokyo* – Natural Science 1 (incomplete)

Apr '21–Sep '21

## SKILLS

### CUDA

Contributed to CuPy, a GPU-accelerated version of NumPy/SciPy

Familiar with CUDA C++, asynchronous point-to-point communication using NCCL

### Compilers

Made a simple C compiler capable of compiling itself

Analyzed assembly to spot compiler optimizations

Vectorized computation using compiler intrinsics

### ML Frameworks

Familiar with the JIT compiling system of CuPy (internally used by Chainer)

Trained a CNN using flax

### Competitive programming

Ranked 166<sup>th</sup> in Google Code Jam 2022 Round 2

Rating 2204 on AtCoder (highest: 2228)

Fluent in C++20, Python and Rust

### Robot tournament

Advanced to world finals of RoboCupJunior in the Soccer Lightweight division and ranked 10<sup>th</sup> in 2018, 2<sup>nd</sup> in 2019

Designed an omnidirectional camera and optimized camera recognition

### Web development

Developed a web application in a team that managed ticket distribution in our school festival through a ballot system

Developed a Discord bot for a competitive programming community, which periodically updated people's Discord roles based on their current ratings

Created and published a static web site for an Olympiad math community

### Mathematics

Advanced to the final round of the 30<sup>th</sup> Japan Mathematical Olympiad

Organized a weekly study group on Olympiad mathematics at high school

### Growth mindset

Contributed to online seminars on graduate level mathematics and algorithms since high school

Obtained British high school qualifications on my own

## EXPERIENCE

*Preferred Networks, Inc.* – Software Development Internship

Aug '23–Sep '23

Added a distributed N-dimensional array to CuPy (single host, multiple devices)

Interacted with CUDA kernels and runtime APIs

Implemented asynchronous data transfer between devices using NCCL

Details: <https://shino16.github.io/blog/post/work/intern-pfn-en>

*Fixstars Corporation* – Software Development Internship

Dec '22

Manually vectorized scientific computations on a supercomputer SX-Aurora TSUBASA in C++17

Improved existing code and fixed a miscalculation

Analyzed assembly to spot compiler optimizations

Cooperated with team members remotely