YOSHIKI FUJIWARA

I have TOEFL 100 and good communication skills in English
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EDUCATION

The University of Tokyo *April 2021 - Present*
M.S. in Computer Science. GPA: -
Graduate School of Information Science and Technology
Advisor: Shinya Takamaeda-Yamazaki

The University of Tokyo *April 2017 - March 2021*
Bachelor of Science in Information Science. GPA: 3.9/4.0. (Note that **my major GPA is 4.0/4.0.)**
Department of Information Science, Faculty of Science
Advisor: Shinya Takamaeda-Yamazaki

ENGLISH

TOEFL iBT: **100** (My Best Score: **102**)

INTERNSHIP EXPERIENCE

Microsoft Development *August 2021 - Present*
Software Engineer

- I participated in a project to optimize advertisements in the Bing search system. I'm now implementing new AB tests and analyzing their results.

NTT Data *September 2019*
Development

- I participated in a project to create a system that uses the newly introduced national system called "my number." My contribution to the project was to propose a different system for handling the secure information and involve in its development.

Amazon Web Services Japan *August 2019*
Solution Architect

- I participated in a project to manage a large web page with huge traffic using AWS and find the optimal configuration and modification for their requirements. My contribution to the project was to propose the system configuration and created a mock for the proposal.

The University of Tokyo & Toyo University *February 2019 - Present*
Technical and Teaching Assistant

- **Industrial Control Systems**: As a technical and teaching assistant, I am involved in ICS security. Our team provides lectures and hands-on training to deepen the understanding of ICS security. In hands-on training, we attack pump systems that mimic factory systems connected to the Internet. The security lectures and training were provided not only for the university but also for the electric power companies in various countries through the Ministry of Economy, Trade and Industry in Japan. I was involved in the construction of the hands-on training and technical support for the lecture. My name is written in the following link in 2021.
  2021: https://www.meti.go.jp/english/press/2021/0315_001.html,
  2019: https://www.meti.go.jp/english/press/2019/0912_002.html.

TECHNICAL SKILLS

GitHub	`https://github.com/yoshi-ki`
My Coding Experience	`https://github.com/yoshi-ki/BACHELOR`
Tech Blog	`https://yoshi-ki.medium.com`
Frequently Used Language	C, C++, Python, Verilog HDL
Frequently Used Software Tools	PyTorch, Vitis HLS

RESEARCH AND TEACHING JOBS

The University of Tokyo *April 2021 - Present*
Research Assistant

- **Algorithm/hardware Co-design for Bayesian Neural Networks**: In this project, I focused on algorithm/hardware co-design for Bayesian Convolutional Neural Networks. I found a bottleneck of the computations and proposed a new approximation method for the computation. To support the approximation algorithm efficiently on hardware, I proposed a novel hardware design.

The University of Tokyo & Toyo University *February 2019 - Present*
Research Assistant

- **Malicious Information Sharing Systems**: As a research assistant, I started a project related with computer security. I built a system that can share malicious information among companies and automatically include it in the network configuration and evaluated its performance.

The University of Tokyo *April 2021 - Present*
Teaching Assistant

- **Hardware Laboratory**: I support a class for undergraduates covering circuit design using breadboards and implementation of important circuits, such as FPU and UART, using Verilog HDL.

PUBLICATION

1. **Fujiwara, Y.** & Shinya, T.
   "ASBNN: Acceleration of Bayesian Convolutional Neural Networks by Algorithm-hardware Co-design"
   Full paper accepted in Application-Specific Systems, Architectures and Processors 2021, which is **one of the top conferences in the field of computer sciences**.

PUBLICATION & TALK (JAPANESE)

1. **Fujiwara, Y.** & Shinya, T.
   "Acceleration of Bayesian Convolutional Neural Networks by Algorithm-hardware Co-design"
   Summer United Workshops on Parallel, Distributed and Cooperative Processing (SWoPP) 2021.
2. **Fujiwara, Y.** & Okada, S. & Ito, Y. & Yoshikura, M. & Kusumi, R., Mitsunaga, T.
   "Realization and Improvement of DX for Municipal Activities based on Digital Business Models "
   The 83rd National Convention of Information Processing Society of Japan.

QUALIFICATION & AWARD

Applied Information Technology Engineer *December 2020*

- Japanese qualification that qualifies that I have applied knowledge and skills as an IT engineer.

Sugaku Koshien Final Round *September 2016*

- The Japanese event for selecting top high school students in mathematics. I was in the final round (top 50).

GRANT PROGRAM

Education Network for Practical Information Technologies (enPiT) *March 2021*

- Japanese program that qualifies the students who have enough knowledge about "Big Data Analysis", "Security", "Embedded Systems", and "System Designs."

NICT Quantum Camp *March 2021*

- NICT's program to foster quantum information specialists

Deloitte & The University of Tokyo SiSOC Cyber Security Training *September 2018*

- A Course to learn the basic of the cyber security through competition called CTF. I was top 10 of the competition.

STUDY ABROAD EXPERIENCE

Westchester Lutheran Church & School *January 2014 - March 2014*

- I went to a middle school in Los Angeles and stayed with student's family for three months.

PROGRAMMING EXPERIENCES

I list my programming experiences in time order. Most notable experience is "Deep Leanring Framework Implementation (June 2020)."

RISC-V Core Implementation *April 2021 - July 2021*

- I developed a RISC-V pipelined core using Verilog HDL.
- Language: Verilog HDL
- URL: `https://github.com/yoshi-ki/RISC-V-core`

MobileNet v2 Implementation *May 2021*

- I implemented MobileNet v2, which is one of the major neural networks in edge devices.
- Language: Python, PyTorch
- URL: `https://github.com/yoshi-ki/MobileNetv2-practice`

Neural Network Accelerator *January 2021*

- For my research, I implemented an convolutional accelerator on FPGA.
- Language: C++, Vitis HLS

Bayesian Neural Network Implementation *October 2020 - March 2021*

- For my research, I implemented some algorithmic accelerations of Bayesian Neural Networks in forked repository.
- Language: Python, PyTorch
- URL: `https://github.com/yoshi-ki/Bayesian-Neural-Networks`

Neural Network with Posit *October 2020*

- For my research, I implemented a neural network which is operated by a special format, posit.
- Language: Python, PyTorch
- URL: `https://github.com/yoshi-ki/Posit-DNN`

Deep Learning Framework Implementation *June 2020*

- For my deeper understanding of neural networks, I implemented my own deep learning framework. This framework can handle low bit precision neural networks.
- Language: Python, PyTorch
- URL: `https://github.com/yoshi-ki/QNN-Framework`

Computer Graphics *April 2020*

- I implemented and deepened my understanding of basic algorithms related to computer graphics.
- Language: JavaScript
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/Computer_Graphics`

Implementation of CPU *October 2019 - March 2020*

- This is a team project to create our own CPU on FPGA. My contribution was to create a software simulator for our defined ISA and to act as a bridge between compiler development and CPU development. Plus, my simulator was really fast.
- Language: C++
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/CPU`

Numerical Analysis *October 2019 - January 2020*

- I implemented the Runge-Kutta method, FFT, and other basic numerical algorithms. I also programmed parallel processing using CUDA, MPI, and routines such as BLAS.
- Language: C++ and Python
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/Numerical_Analysis`

Machine Learning Algorithm *October 2019 - July 2020*

- I implemented the basic machine learning algorithms and some algorithms in statistics.
- Language: Python
- URL1: `https://github.com/yoshi-ki/BACHELOR/tree/main/Intelligence_System`
- URL2: `https://github.com/yoshi-ki/BACHELOR/tree/main/Statistical_Machine_Learning`

Compiler *October 2019 - January 2020*

- I implemented basic algorithms such as alpha transformation and partial adaptation in a publicly available Ocaml compiler called mincaml.
- Language: Ocaml
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/Compiler_Lab`

System Processor *April 2019 - July 2019*

- To deepen my understanding of computer systems, I created shells, TCP communication, thread programming, and device drivers.
- Language: C
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/System_Programming`

Functional Language and Logic Language *April 2019 - July 2019*

- To become familiar with functional languages and logic programming languages, I implemented them. Through the creation of an interpreter, I also gained an understanding of algorithms such as type checking.
- Language: Ocaml, Prolog
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/Functional_Language_Lab`

Basic Algorithm with C *October 2018 - January 2019*

- I practiced basic algorithms in C, such as sorting, binary trees and search. I also implemented some easy programs in assembly language.
- Language: C
- URL: `https://github.com/yoshi-ki/BACHELOR/tree/main/Basic_Algorithm`

iOS Application *August 2018*

- I created a timetable application for college students with a friend.
- Language: Swift

Implementation of Web Services *September 2017 - February 2018*

- The first thing I did was to create a web application for our class bulletin board. It was written without using any framework, and was designed using a template published on the web. After that, I joined a rails study group in my college and created the original draft of an information sharing system at my university. The group later published an information sharing system called UTES, which is one of the most frequently used applications in my college.
- Language: Ruby