Yutaro Yoshii

**Full Stack Engineer**

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Detail-oriented software engineer with expertise in React, TypeScript, and Spring Boot. Successfully lead multiple migration projects, skilled in complex refactor and dependency reorganization. Experienced in protocols including OAuth2 and low-level web APIs. Committed to delivering high-quality, maintainable software solutions.

**Technical Skills**

**Programming Languages**

* **Frontend**: JavaScript, TypeScript, HTML, CSS, Elm, GLSL, Coffeescript, processing
* **Backend**: Java, Kotlin, PHP, Golang, Markdown, Postgresql, Mongodb
* **Systems Programming**: C, C++, Assembly (MIPS, RISC-V), Verilog
* **Scripting**: Bash, Lua, Scheme, Python, Systemd, Makefile
* **Scientific/Research**: Julia, Fortran, Brainbreak, Scheme, R

**Frameworks & Tools**  
React, Next.js, Redux, Vite, Webpack, Express.js, Spring Boot, Jenkins, Gitlab CI, Docker, Oauth2, PKCE, Rest API, WebSocket, Canvas, Three.js, Mongoose

**Experiences**

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| **Rakuten Tech in Europe** | **Berlin, Germany** |
| Full stack engineer | September 2023 — Present |

* Webpack to Vite migration of a React TSX project, as well as the accompanying Jenkins CI & Docker related update
* Maintain a full stack application with NextJS Redux Typescript frontend, and Spring Boot backend
* JavaScript to TypeScript migration, as well as overhaul of a frontend SDK for an iframe-based login widget. I cut down the code size in half, while keeping the same API.
* Maintain an Elm project based on the functional paradigm used by millions of users daily
* Perform a large scale refactor (-3756 lines removed, +1760 lines added) on an internal demo site based on expressjs backend. Make things overall manageable. Update the CI.
* Implement part of Oauth2 protocol (PKCE), write documentations, and perform KT over it
* Perform code review on other colleagues, in the areas including pipeline, frontend, and backend.
* Teach Typescript, Elm, as well as the SOLID principles to an intern based in Berlin, as well as a junior developer based in the US

GCP, AWS, Cloudflare, nestjs (create POC)  
Create 3 versions (frontend, backend, and fullstack)

OpenId Oauth

IAM (Look it up)  
Reduce the top introduction line to 3  
  
Frontend oriented (nodejs ecosystem (nest etc))  
Fullstack oriented ()  
// Backend oriented (Spring, java etc)

Talk about specific projects (omni, onpage, rep, and myr)

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| **Open Source Contributor** | 2022— 2023 |

* **VoxelForge**: Minecraft-related library ecosystem written in JavaScript and TypeScript. Wrote the nbt encoder-decoder as well as developed a domain specific JSON-like strictly typed serialization language to represent NBT in a text based format. Developed an in-house JSON-superset object validation library.
* **PulseCast**: Pulseaudio-web casting with minimum latency and variable audio quality. Wrote the pulseaudio-web server interface in C++, as well as the web server using NAPI and Node.js
* **Project Amaterasu**: Collection of astronomy-related libraries that are mainly used for gravitational modeling and simulation. Implement FFT accelerated particle mesh simulation, as well as Runge-Kutta based high fidelty orbital calculation.
* **Git-find**: A command-line tool for quickly locating Git repositories by name and remote URL, with customizable search options and clear output formatting. Implement recursive search as well as error handling.
* **Hover-ddns-js**: A DDNS server for the Hover domain provider. Port hover-ddns into javascript, and add systemd service file to be ran as a daemon.
* **Competitive Coding**: Complete all problems 106 in ProjectEuler. Solve AdventOfCode 2022 and 2023 to competition.
* Hover-ddns
* **Minecraft World Generator:** Developed a TypeScript-based world generator by analyzing Minecraft’s binary API, and created a strictly-typed, JSON-like domain-specific language that is binary-compatible with Minecraft’s NBT (Named Binary Tag) format.
* Analyze binary API of Minecraft, create a TypeScript based world generator
* Create a strictly typed JSON-like domain specific language that is binary-compatible with NBT
* Write a DDNS service for Hover using systemd and nodejs
* Create an audio capturing & streaming web application using C++ and NAPI to interface with the PulseAudio, and node.js to work as the backend.
* Author obj-schema-validator, a schema JSON validation engine written in JavaScript with expressive and flexible syntax as well as extensive documentation
* Author parallel.js, used for parallel execution of a JavaScript function using a worker thread
* Author git-find, a git project manager, to manage and search through hundreds of my personal projects
* Author client-inspector, used to debug clients without direct console access, such as mobile phones.
* Author objdiff, a javascript based library to compare two similar json objects, and be able to iterate over the differences
* Author bitfield.js, which provides bitwise abstraction over a continuous typed array in JavaScript, enabling the implementation of memory efficient algorithms
* Author flat-fft, an optimized FFT and IFFT using pure javascript.
* Start ProjectEuler under the handle martian17 (Now at problem 106)
* Conceive and implement a tree-based algorithm for automatically generating Piet-Mondrian animation
* Design languages and implement interpreters for: toylang, rearbreak, modsupportlang, and mylisp.
* Create a generic parser in TypeScript
* Create variations of Brainbreak compilers and interpreters, some more optimized than another
* Extend the node.js repl to be able to import ES6 modules natively
* Create a scraper for YouTube playlist
* Answer questions and instruct computer science students at the BytesToBits discord server as a sineor staff
* Take part in the Advent of Code 2022 and 2023 to their completion
* Create a general purpose public key cryptography frontend that can be used for secure communication on a social media
* Implement the Euler’s method gravitational n body solver in Fortran, and a Runge-kutta version in JavaScript, as well as an accompanying visualization using HTML Canvas
* Implement an optimized (64800000% speed up to the original solution, fastest in the world at the time) solver for the five-five-letter-words problem introduced by Matt-Parker
* Implement a memo-optimized knits tour discovery algorithm
* Publish and maintain chrome extension, including switch-tabs-shortcuts, with 300 active users
* Create a gate level hardware simulation library hd.js
* Create a Golang-based chat app using Gorilla Web Socket
* Implement a new shortcut-option for Tmux using C
* Study low level compiler and CPU functionalities, and create a branch prediction model using C
* Study image processing using kernels, create an edge detection library in JavaScript that converts an image into vector
* Inspired by the Tokyo 2020 drone show, create a copy of the pattern using only math and algorithm

These are only a tiny selection from my 275 public projects on Github. Please visit <https://github.com/martian17> for a further project list

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| **Keio university AQUA quantum research group** | | **Fujisawa, Japan** |
| Research Assistant | April 2021— March 2022 | |

* Implement the blossom maximum matching algorithm to analyze the suitability of a given network to be used for quantum connections
* Write force directed graph drawing for network visualization using HTML Canvas and JavaScript
* Study complex wave interference equations and create a 2d simulation of energy distribution as well as amplitude
* Implement a solution to graph coloring problem in QISKIT, and analyze the performance against a classical implementation
* Take part in the development of an online education platform based on React.js