

# YUMA TAKAHASHI

Boston · takahashy7@gmail.com · (347)846-9214

GitHub: <https://github.com/takahashy>

<https://takahashy.github.io/personal-website>

## EDUCATION

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### Tufts University

Medford, Massachusetts

*Bachelor of Science Degree in Computer Science and Mechanical Engineering*

Sep 2019 - Jun 2023

- **Relevant Courses:** Data Structures, Algorithms, Programming Languages, Compilers, Machine Structure and Assembly-Language Programming, Computation Theory, Web Programming, Security, Linear Algebra, Numerical Linear Algebra, Mathematical Modeling, Discrete Mathematics, Differential Equations, Probability and Statistics
- **Extracurriculars:** Japanese Culture Club Eboard, Math Society, Intramural Soccer and Volleyball

### The Bronx High School of Science

Bronx, NY

*High School Diploma*

Sep 2015 - Jun 2019

- **Awards:** National Honors Society, AP Scholars with Distinction, AIME

## SKILLS

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Programming Languages: Python, C/C++, Javascript/Typescript, HTML, Assembly, MATLAB, OCaml  
Software/Libraries/OS: Linux, Git, numpy, pandas, matplotlib, scikit-learn, CAD/FEA, Makefile  
Bootstrap, NodeJS, Express, EJS, RESTful API, Axios, MongoDB  
Foreign Language: Native Japanese Bilingual and Biliterate

## PROJECTS

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### Password Checker

- Created a password checker using the haveibeenpwned API written in Python
- Verifies that a password is secure by checking if it is a reused credential

### Arith

- Built a compressor for Pixmap images and a corresponding decompressor by packing and unpacking binary data in C and C++
- Achieved a root mean square difference of 2% between original and decompressed images

### Universal Machine

- Built a 32-bit virtual machine emulator consisting of eight general purpose registers and segmented memory written in C and C++
- Used profiling techniques to improve the runtime by over 90%

### Mood Tracker

- Created a mood tracker website that provides convenient ways to make a diary entry and analyzes the user's mood based on their trends
- Uses external APIs, SQL Database, and interacts with the server using PHP

### sPool Programming Language

- Created a general-purpose, statically-typed programming language using OCaml and LLVM
- Incorporates concurrent programming via multithreading, automatic memoization for dynamic programming, and functions as first-class citizens

### Progress Manager

- Developed a website that logs daily activities generating a breakdown of user's day
- Uses EJS to load the page, stores daily logs in MongoDB and interacts with the server using Express

## WORK EXPERIENCE

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### Tufts Pre-College Coding 101 Program

Tufts University, MA

*Instructors Assistant*

July 2022 - August 2022

- Explained Python concepts and helped develop modules with the program instructor
- Programmed the space invaders game using pygame in Python

### Staar Center, Tufts University

Tufts University, MA

*Intro to Computer Science Tutor*

Sep 2021 - May 2023

- Worked with students outside of lectures to clarify covered topics
- Provided support for students learning C++, Python, and Javascript by answering questions regarding homework, classwork, exams, and labs

### Department of Physics, Queens College

Queens College, NY

*Assistant Researcher*

May 2018 - Jun 2019

- Researched on the applications of quantum physics in the mitochondria of a cell, mentored by Professor Lev G. Murokh
- Generated plots and calculated systems of partial differential equations written in MATLAB
- Improved run time efficiency by 40% and mitigated approximation errors