

YUMA TAKAHASHI

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[personal-website](#)

EDUCATION

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

Programming Languages: Python, C/C++, Javascript/Typescript, HTML, Assembly, MATLAB, OCaml

Software/Libraries/OS: Linux, Git, flask, MySQL, numpy, pandas, matplotlib, scikit-learn, Makefile
Bootstrap, NodeJS, Express, EJS, RESTful API, Axios, MongoDB

Foreign Language: Native Japanese Bilingual and Biliterate

PROJECTS

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

Life Log

- Developed a website that logs daily activities generating a breakdown of user's day
- Interacts with server via Flask, stores daily logs in MySQL, and uses JavaScript for frontend application

WORK EXPERIENCE

Tufts Pre-College Coding 101 Program

Tufts University, MA

Instructors Assistant

July 2022 - August 2022

- Facilitated comprehensive instruction in Python, encompassing foundational and advanced principles
- Designed and implemented learning modules with instructor

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