

# Jacob Barrett

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## Education

**Stony Brook University**    GPA: **3.80**  
B.S. in Computer Science    Graduated May 2023

## Skills

Experienced in C, Python, Java, Javascript (React, Node.js), Typescript, OCaml, and MIPS Assembly. Familiar with SQL, MongoDB, Firebase, Firestore, Git, and R. Familiar with Windows, MacOS, Linux.

## Awards

Winner of the Stony Brook University's 19th Annual Game Programming Competition.

## School Projects and Experience

Spring 2022

### Compiler Design – Decaf Compiler

Developed a compiler that takes a program written in Decaf, a language modeled after Java, and compiles it to abstract machine code. Written in Python over the course of the semester.

Fall 2021 / Fall 2022

### Systems Fundamentals I & II

Programmed multiple non trivial assembly and C programs. Learned about CPU architecture, digital logic, memory organization, floating point representation, operating systems, memory management, and multithreading.

Spring 2023

### 2D Game Programming – Shoot em Up Game

Developed an award winning game requiring modifications to the typescript game engine, lighting shaders and rendering additions, development of a custom recursive level format, firebase and firestore integration for hosting and the leaderboard, and ~30k lines of gameplay code over the course of 6 weeks.

## Other Classes

Software Engineering, Operating Systems, Machine Learning, Software Development, Computer Networks, Analysis of Algorithms, Programming Abstractions, Data Structures

## Personal Projects

Developed an original 2D platforming game over the course of several months. Required reading large amounts of documentation and writing several thousand lines of code.

Created an automatic header file generator in C, Memory Allocator in C, Mancala and Mancala playing bots in python, and a trading card game probability calculator in Java.

## Relevant Interests

Interested and proficient in programming/optimization games (SHENZHEN I/O, TIS-100, Opus Magnum). Enjoys videos about shader programming, game console programming and other hardware, and mathematics. Currently taking the Performance Aware Programming course. Curious about the world both technically and otherwise. Interested in understanding how hardware works and how to write performant software utilizing it.