Connor W. Fitzgerald

cwfitz.com ■ Connor.Fitzgerald94@myhunter.cuny.edu ■ GitHub: cwfitzgerald

EDUCATION

Hunter College, City University of New York — Expected May 2021
Bachelor of Arts in Computer Science and — GPA: 3.87
Bachelor of Arts in German

- Daedalus Computer Science Honors Program
- NYS STEM Incentive Program: Scholarship Recipient

TECHNICAL SKILLS

- Programming Languages: C++ (5yrs), C (5yrs), C# (4yrs), Rust (1yr), Python (6yrs), Scala (2yrs)
- Graphics: OpenGL, DirectX11, Vulkan, DirectX12, GL Shading Lang, RenderDoc, Nsight, VTune, Tracy, Unity, Blender, clang-tooling
- CI/CD Pipelines: Appveyor, Docker, Travis-CI, Jenkins, GH Actions
- Programming Paradigms: Concurrency, Coroutines, SIMD, Task Parallelism, Threading, Fibers, Async-Await, Cross-Platform, Data Driven Dev, Fuzzing, Parser Creation, Realtime, Unit-Testing
- Misc. skills: Markdown, Kotlin, LaTeX, Linux CLI

RELATED COURSEWORK

- VR, AR, and Mixed Reality
- Computer Architecture 1-3
- Microprocessing & Embedded Sys.
- Computer Theory 1 & 2
- Operating Systems
- Software Analysis and Design 1-3
- Discrete Structures
- Calculus 1 & 2
- Matrix Algebra

WORK EXPERIENCE

Geopipe – Manhattan, NY — July – August 2018
Programming Intern

- Prototyped and developed a Unity game engine plugin in C# to render photo-realistic cities using internal Laser Imaging Detection and Ranging (LIDAR) derived architectural data.
- Streamed user facing 3D mesh objects and texture data from a custom cloud REST API endpoint.
- Developed custom caching and asynchronous processing systems using efficient data structures to hide network latency in a soft real-time environment and to ensure a smooth user experience.
- Engaged in the code review lifecycle as both a reviewer and reviewee.
- Provided regular status updates and gave presentations to both technical and non-technical audiences.

City University of New York Tutor Corps – Manhattan, NY — Jan – Jun 2019
Middle and High School Math Tutor

- Tutored public school students in both Math and Computer Science. Assisted teachers with grading.

RELEVANT EXPERIENCE

Open Source Project: gfx-rs/wgpu — April 2020 – Present
Working Group Member – In the top 5 of Contributors

- WGPU is Mozilla's Rust-Lang implementation of the upcoming WebGPU graphics API created as a standard for web browsers. Out of my 95 merged pull-requests about half are bug fixes.
- Revitalized WGPU's DirectX11 backend fixing many critical bugs and implemented required features such as push-constant emulation, mapping the Vulkan binding model to the DX11 binding model, and shader translation.
- Improved API input validation, constructed additional entrypoints, and implemented platform specific features.
- Researched, documented, and implemented optimizations that utilized OS and graphics card specific features.
- Validated, reviewed, and provided detailed feedback on pull requests to help contributors optimize their code.
- Attended W3 Consortium GPU working group meetings (sponsored by companies like Mozilla, Google, and Microsoft) and improved the WebGPU standard by adding missing data types and improving wording.

Open Source Project: BVE-Reborn/bve-reborn — Fall 2017 – Present
Owner

- BVE Reborn is a complete ground up rewrite of the OpenBVE Train Simulator written in Rust and WGPU. To date the project has roughly 32k lines of code among its 11 subprojects.
- Developed a custom graphics renderer and engine with key features such as: clustered forward lighting, GPU light and object culling, bindless materials, indirect rendering, and physically based rendering.
- Placed emphasis on accuracy, graphics designer friendliness, and performance.