Siddharth Chillale

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EDUCATION

Master of Science in Computer Science — Graduated: 2023
University at Buffalo, The State University of New York, — Buffalo, NY
Coursework -**Operating Systems**, **Distributed Systems**, Analysis of Algorithms, **Modern Networking Systems**, **Database Systems**.

Bachelor of Technology in Computer Science — Graduated: 2021
Indian Institute of Information Technology, Tiruchirappalli (IIIT) — Trichy, India
Coursework - Database Management Systems, Design and analysis of **Parallel algorithms**, **Computer Architecture**, Principles of compiler design.

TECHNICAL SKILLS

Programming Languages : **C/ C++** (proficient) , **Python** (fluent), SQL, **GLSL**
Software Libraries : **OpenGL, Direct3D**, SFML, QT, Nvidia **CUDA,** Pandas, Numpy, Matplotlib, Win32
Other Software Tools : Git, **MS Visual Studio**, **Linux**, Windows, MYSQL, **GNU Debugger**, Jupyter
Game Engine : Unreal Engine 4, Godot game engine

EXPERIENCE

University at Buffalo — 09/2022 - 02/2023

Backend Developer, *[Nodejs, Express, MySQL]*

- Developed middle and back-end layers of a CRM product, collaborating with a front-end team and client under an **Agile** development environment complete with weekly issue tracking on Github with deployment to Apache Web Server
- Implemented new **REST APIs** and modified existing APIs according to requirements and debugged defects, using **JavaScript**, SQL, and documented the changes using Swagger.
- Performed **25+** code reviews and **20+** code merges for pull requests on Github with focus on stability and reliability.

TECHNICAL PROJECTS

Relational Database Engine (Taco-DB) *[**C++**, gdb, linux]* *under Dr. Zhuoyue Zhao* — 02/2022 - 05/2022

- Developed database operations like **join operations, aggregation, database caching** and **indexing** implemented using B-Tree.
- Ensured the correct working of database systems like storage management system, query processing and query optimization by implementing RDBMS features in a large codebase tested against **200+** test cases using **GoogleTest**.

Stanford PintOS Operating System *[C++, gdb, linux, git]* *under Dr. Farshad Ghanei* — 09/2021 - 12/2021

- Implemented various operating systems scheduling algorithms like **priority scheduling**, **priority donation** using **MutiLevel Feedback Queue System** for kernel threads.
- Accomplished support for user programs by implementation of kernel system calls and a virtual file system successfully.
- Tested the operating system against a provided test suite of **150+** test cases along with custom test cases.

TCP/IP chat application *[**C++**, gdb, linux, git, wireshark]* — 09/2022 - 12/2022

- Developed a client-server chat application using **TCP** sockets for communication between 5 linux servers.
- Wrote functionality of shell commands like login, logout, block/ unblock peer-clients, broadcast and admin monitoring commands.
- Implemented data transport protocols like Alternating-Bit (**ABT**), Go-Back-N (**GBN**), and Selective-Repeat (**SR**).

MeshEditor *[C++, Visual Studio, windows]* *under Dr. JingJing Meng* — 09/2021 - 12/2021

- Developed **6** local mesh operations including vertex operations, edge operations, face operations on 3D Mesh Models.
- Developed several global mesh operations such as **Loop Subdivision** and **Triangulation**.

PERSONAL PROJECTS

Software Path-tracer *[Visual Studio, C++, CUDA]* — 05/2022 - 08/2022

- Implemented Monte Carlo software path tracing using **importance sampling** showcasing **direct** and **indirect illumination**.
- Achieved **10x** faster render times upon accelerating the engine using NVIDIA **CUDA** along with CPU **Bounding Volume Hierarchy**.
- Implemented features like **antialiasing**, support for **diffuse**, **metal** and **dielectric** materials, texture mapping with **images, perlin noise and patterns**, **volume rendering**, with direct and indirect illumination.

Cofe Rendering Engine *[Visual Studio, C++, MS DirectX API]* — 01/2022 - 08/2022

- Designed and integrated 3D deferred shading graphics pipeline using Direct3D 11 API.
- Implemented **Mesh loading, Frustum culling, Gouraud shading, Phong lighting, Texture Mapping, Camera Transformation**.