

Samuel McFadden

PROFESSIONAL EXPERIENCE

Microsoft (*Dec 2021 – July 2024*)

Senior Software Engineer (*Mar 2023 – July 2024*), Software Engineer II (*Dec 2021 – Mar 2023*)

- Developed the WebGL graphics engine of Microsoft Designer, an AI image generation and 2D content creation app. This includes developing GLSL image shaders, hardware and browser-specific bugfixes, rendering engine infrastructure, and performance optimizations.
- Used the BabylonJS game engine and WebGL to develop the animations, editing experience, and server-side image export pipeline for Greeting Cards feature for Microsoft Designer. Also communicated technical capabilities and restraints to the product and engineering management.
- Developed a novel text layout system using Typescript for NodeJS and web browser use. Includes features such as paragraph layout, text anchoring, linespacing, international text and emoji support, and other text effects. Also developed end-to-end testing and benchmarking used to evaluate the performance and quality of this system.
- Led telemetry reviews to measure and analyze rendering performance. Developed telemetry code, and created Kusto dashboards to track key rendering metrics of users. These metrics help identify issues regarding performance, GPU memory usage, hardware-specific rendering bugs, and WebGL context-loss rates, which enabled over 20000 extra users per month with hardware constraints to use the product.

Pixar Animation Studios (*Sept 2019 – Nov 2021*)

Software Engineer / Technical Director (title also known as Technical Artist)

- In close collaboration with artists, created software to solve technical challenges involved with animated films.
- Using Python, C++, and Unity, developed software to enhance 3D and virtual reality (VR) software and asset pipelines.
- Designed and implemented tools that streamline and improve the user experience of artists' content creation workflows.
- Production Film Credits: Luca (2021), Lightyear (2022)

The Walt Disney Company (*May 2019 - Aug 2019*)

Emerging Technology Software Development Engineer Intern

- Using SQL, Apache Spark, Scala, and NumPy, provided data visualization for the emerging tech team.

The University of Illinois at Urbana Champaign (*Aug 2018 - May 2019*)

Teaching Assistant CS 498 Virtual Reality

- Designed coursework for University of Illinois' virtual reality class, which had over 200 enrolled students. Aided students by questions about Unity, the Oculus SDK, computer graphics, and VR development best practices.

Liberty Mutual Insurance (*June 2018 - Aug 2018*)

Machine Learning Software Engineer Intern

- Using SciKit Learn, NumPy, and Java Springboot, created and deployed ML models to estimate risk for customers.

PROGRAMMING SKILLS

- Daily working proficiency: TypeScript, Python, KQL. Working proficiency: C++, SQL, C#. School proficiency: C
- Experience with WebGL, Unity, BabylonJS, OpenGL, Git, Linux, AWS, Perforce, USD, PyQt / PySide, NumPy

EDUCATION

University of Illinois at Urbana-Champaign, B.S. Computer Science with Honors, *GPA 3.75 (2016 - 2019)*

PERSONAL PROJECTS / OTHER POSITIONS

Samupath - Production Raytracer

- Developed a raytracing engine designed to efficiently generate photorealistic images. Written in C++.

ConverseAI - OpenAI Powered Non-Playable-Character Imitation Engine

- Using AWS Transcribe, AWS Polly, and the OpenAI GPT-3 APIs and frameworks, created an experimental talking conversation bot that allows you to talk to an imitation of any person, real or fictional, based on a 1 paragraph description

SIGGRAPH Chapter Chair, Special Interest Group on Computer Graphics University of Illinois Chapter

- Led tutorials in 3D graphics fundamentals such as 3D modeling, coding, rendering, shaders, VR/AR, and more.