MATTHEW DIBBLE

Highly motivated and passionate graphics engineer with 3+ years AAA experience

dibble.matthew@outlook.com ◇ matthewdibble.com ◇ github.com/mdibble

SKILLS

Languages	C++, Rust, C, HLSL, Slang, Python, Lua, C#
Tech	DX12, Agc, Vulkan, Metal, PIX, Razor GPU, NSIGHT, RenderDoc, Visual Studio, Perforce, Git
Skillset	Ray tracing, GPU debugging & profiling, multithreaded programming, large codebases
Platforms	PS5, XB4, Windows, macOS

EXPERIENCE

Activision   September 2022 - Present
Software Engineering, Graphics   *Toronto, Canada*

- Improving Call of Duty's internal tools renderer that powers editing and baking workflows
- Integrating **real time ray tracing** to the renderer (path tracing, reflections, and ambient occlusion modes)
- Added **volumetric lighting**, screen space shadows/reflection/refraction, GTAO, and subsurface scattering
- Revised post processing pipeline by adding **DLSS**, SMAA, ACES 2.0, DoF, and temporal accumulation
- Transitioned the renderer to a **bindless architecture** for materials and geometry, as needed by ray tracing
- Converted the renderer to use a **render graph** to automate dependency and barrier management
- Developed a suite of **HLSL shaders** to **visualize performance metrics** directly within the game's editor
- Implemented an **API** for creating prefab derivatives, **accelerating the creation process** for certain assets
- **Refactored** the editor's **entity filtration system** to offer better **performance** and usability in large maps
- Games: *Call of Duty: Modern Warfare III*, *Call of Duty: Black Ops 6*, *Call of Duty: Black Ops 7*

BlackBerry   September 2021 - December 2021
Software Engineer Intern   *Waterloo, Canada*

- Developed a flexible metric collection framework using **Rust**, also implementing a **C** interface via bindings
- Enhanced threat-detection software by developing a **metadata parser** that aggregates crucial information
- Implemented **HTTP/2** support in a component of software allowing for a **15% decrease** in request times

PROJECTS

Real-time Physically Based Renderer — C++, Metal, Vulkan   Source

- Scalable PBR renderer built from the ground up containing backends for **Metal and Vulkan**
- Includes support for TAA, bloom, soft shadows (PCSS), auto-exposure, tonemapping, and HDR rendering

Nintendo Entertainment System (NES) Emulator — Rust, SDL2   Source

- Cycle-accurate emulator of the *NES* that takes advantage of **Rust**'s unique properties
- Degree of accuracy allows for play of *Super Mario Bros.*, *The Legend of Zelda*, and much more

EDUCATION

Bachelor of Science in Computer Science, Wilfrid Laurier University   September 2018 - August 2023
Bachelor of Business Administration, Wilfrid Laurier University   *Waterloo, Canada*

- Dual Degree — 3.9/4.0 GPA
- Teaching Assistant & Grader, Data Structures II