Ameer Jalil

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SUMMARY

Computer Science graduate with 6+ years of programming experience, specializing in GPUs and performance optimization

EDUCATION

Drexel University – The College of Computing & Informatics
Master of Science, Computer Science   GPA: 4.00
Bachelor of Science, Computer Science   GPA: 3.95

RELEVANT EXPERIENCE

Software Development Engineer - DirectX Raytracing Driver   **Jul 2022 – Present**
AMD Corporation

Performance Optimization
- Designed and maintained a batched **BVH** build pipeline, boosting performance by up to 30%
- Conducted high level performance analysis using **PIX** and **Radeon GPU Profiler**
- Optimized **HLSL compute shaders** to maximize wave occupancy on RDNA GPUs

Debugging and Stability
- Assisted in **post-silicon** bring up of 2 generations of GPUs, ensuring driver stability and correctness
- Performed low level **kernel-mode** debugging of GPU hangs using **WinDbg**
- Leveraged tools such as **PIX** and **Renderdoc** to resolve graphical corruption
- Collaborated with engineers across teams to identify and resolve complex issues

Developer Productivity and Support
- **Mentored** two junior team members, and presented debugging processes and techniques to the team
- Added debug settings to the driver, simplifying the triage and debugging of Raytracing-related issues
- Participated in **code reviews**, contributing to code quality improvements and deepening codebase knowledge
- Initiated automation of code style guideline enforcement using **clang-format**
- Added support for Precompiled Headers in the **D3D12 driver** and its dependencies, improving compilation times by 2x

Open Source Maintainer - GPU Emulation   **Jun 2020 – Aug 2023**
yuzu Emulator

Feature Development
- Implemented an option to unlock frame rates beyond the Nintendo Switch's limits
- Contributed to texture resolution upscaling for the **OpenGL** and **Vulkan** renderers
- Rewrote and optimized an **ASTC** texture decoder as a **compute shader**, improving performance by over 15x
- Engineered a solution to decode raw **H.264** and **VP9** video streams using **FFmpeg**

Quality Improvements
- Partnered with two developers to rewrite the **Maxwell ISA decompiler** to **GLASM**, **GLSL**, and **SPIR-V** shader generators
- Resolved graphical corruption in emulated games, resulting in more accurate GPU emulation
- Performed comprehensive **code reviews**, ensuring high-quality contributions and maintaining project standards

Graphics Performance Validation Engineer Intern   **Mar 2021 - Sep 2021**
Intel Corporation

- Collaborated closely with hardware architects to develop micro benchmarks validating **pre-silicon** GPU performance, focusing on memory access patterns in **Compute** and **Graphics** workloads
- Created an API for retrieving performance targets in micro benchmarks

SOFTWARE PROJECTS

Fool's Gold Frenzy   Directed a team of 6 in developing a Mario Kart inspired 3D online battle multiplayer game
Advanced OpenGL Renderer Implemented transform feedback, tessellation, real-time shadows, screen space reflections
3D Software Ray Tracer   Supporting textures, shadows, reflections, refractions, and adaptive super-sampling

TECHNICAL SKILLS

Programming Languages C++20, CMake, C#, GLSL, HLSL, Golang, Java, JavaScript, Python
Technical Concepts   2D/3D Graphics, GPU Programming, Operating Systems, Ray Tracing, Systems Architecture
Tools & API's   D3D12, Git, MS Visual Studio, Nsight Graphics, OpenGL, PIX, Renderdoc, Vulkan, WinDbg