

# Abdelhadi Mohammed Salih

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## EDUCATION

**BSc. Computer Science**  
CAIRO UNIVERSITY

March 2021 | February 2026

## WORK EXPERIENCE

**THE FORGE INTERACTIVE** | GRAPHICS PROGRAMMER San Diego, remote | May 2024 – October 2024

- Redesigned and implemented a File-system abstraction for Windows, macOS, iOS, Linux, PS4, Xbox, and Nintendo Switch, resulting in less path manipulation and no syscalls.
- Updated projects structure to share configurations and do less file copying, and use symlinks instead.
- Ported testing scripts on iOS to use the new devicectl utility from Apple.
- Purged unused libraries from the build system and code.

**ELLIPTIC CONSULTANTS** | FULL-STACK ENGINEER Dubai, remote | August 2022 – July 2023

- Improved the website build time from 2 minutes to less than 1 second by migrating to a new build system, allowing fast iterations for developers.
- Built the media pipeline, which includes uploading, processing, converting, and storing using AWS's Lambda, S3, and Media Converter.
- Wrote infrastructure deployment code using AWS's SAM framework.
- Spotted multiple critical vulnerabilities and bugs and helped fix them.

## OPEN-SOURCE CONTRIBUTIONS

**MESA DRIVERS (WIP)** [↗](#)

Updating NIR optimization passes to retain debug info and propagate more of it, such as chain access and type info.

**MESA DRIVERS** [↗](#)

Found a bug where the ACO shader compiler sets a false instruction offset in debug info; updated to prevent recurrence.

## PROJECTS

**AMDGPU NVME P2P DMA** [↗](#) C, VFIO, IOMMUFD, LINUX, AMDGPU KMD

- Prototyped GPU-driven NVMe I/O on AMD GPUs using VFIO, IOMMUFD, DMA-BUF, and libnvm.
- Enabled direct NVMe-to-VRAM DMA by extending AMDGPU kernel driver.
- Debugged RDNA3 cache and VM coherence issues affecting peer-to-peer NVMe DMA completions.

**AMD GPU DEBUGGER** [↗](#) C, MESA DRIVER, AMDGPU KMD

- Implemented a lightweight custom UMD driver for dispatching shaders and programming registers.
- Instruction level stepping and source code mapping.
- Page Table walking and address translation.
- Custom context switching on the GPU for saving the current shader registers state.

**FOLIAGE RENDERING** [↗](#) C++, CMAKE, VULKAN

Built a Vulkan foliage renderer using GPU instancing, compute-based culling/LOD, and indirect draws for efficient grass rendering.

**GEG** [↗](#) C++, CMAKE, VULKAN

PBR/IBL based on Real Shading in Unreal Engine 4 by Brian Karis, and Automated descriptor-set management system with caching and descriptor reuse.