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Omar Salem

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GitHub
Portfolio

Experience

Software Engineer [C, C++] **Arm** ***Aug 2023 – Present***

Worked on Vulkan GPU driver development:

- Fixed a Vulkan driver issue in stencil attachment workflows, resulting in a 15% performance improvement.
- Implemented and validated multiple Vulkan extensions, ensuring spec compliance and successful CTS conformance.
- Collaborated with various teams to diagnose and resolve high-priority customer-reported issues.
- Served as interim Scrum Master during a capacity-constrained period, coordinating priorities and cross-team communication.
- Developed a script to generate CTS test lists under runtime and coverage constraints, enabling improved coverage for the same test runtime.

Software Engineer [C, C++] **Siemens DISW** **Feb 2022 - Jul 2023**

- Designed, implemented, and documented new approaches to load & save UCDB files with less memory usage.
- Extended UCDB APIs and built unit tests to support new loading and saving implementations.
- Designed and implemented a new flow for packaging solutions for HDL designs.

Graphics Engineering Intern [C++] **360Imaging** **Jul 2021 - Oct 2021**

- Worked on asset management and rendering engine refactoring, implementing multiple renderers with batching.
- Created visualizations for CG data structures (BVH trees, Octrees) as examples for the rendering engine.

Software Engineering Intern [C++] **ASI - Egypt** **Aug 2020 - Sep 2020**

Worked on Extreme Loading for Structures (ELS):

- Ported the implementation of Jacobi and Conjugate Gradient methods to use CUDA, increasing the speed for the equation-solving module by 2-3 times.

Education

Giza, Egypt **Cairo University** **Sep 2017 – Jun 2022**

- B.S.E. in Computer and Communications, GPA: 3.99, Ranked 1st in class.
- Coursework: Data Structures, Algorithms, Object Oriented Programming, Microprocessor & x86 assembly, Computer Architecture, Computer Graphics, Linear Algebra, Differential Equations, Numerical Analysis

Projects

Personal Projects

- **OHEngine** C++ ECS engine using OpenGL with shadow mapping, post-processing, and ray picking.
- **OHTracer** My implementation for ”Ray Tracing in One Weekend” tutorial.

Academic Projects

- **Charnel Engine - Pacman 3D** An Entity Component System Engine implemented in C++ and using OpenGL. The engine was used to create a 3D Pacman game.
- **Pocket Tanks x86** A clone for Pocket Tanks game using x86 assembly. The game supports multiplayer using Serial Communication.
- **Simple DBMS** A DBMS implemented in C using our own semaphores based on Linux message queues.
- **Simple 5-stage pipe-lined processor** A 5-stage RISC processor implemented in VHDL.

Languages and Technologies

- **Familiar:** C, C++, x86 assembly, OpenGL, Vulkan, SQLite, Unity, Valgrind, RenderDoc, Linux, Git, Perforce, JIRA
- **Prior experience:** Python, C#, MATLAB, CUDA