OMAR ZOHDI

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Professional Experience

DePaul University, Graduate Assistant *Chicago, IL* (September 2013 - March 2015)

- Tutored undergraduate students in game development topic, including 3d Graphics math, gameplay programming and optimization.
- Taught undergrad and grad students basic programming, including algorithms, data structures.
- Assisted gameplay programming students with development in Unity3D and DePaul's internal C++ engine; Azul.

New Energy S.r.l., Web Developer *Milan, Italy,* (May 2011 - September 2012)

- Developed e-commerce websites using the Magento framework.
- Enhanced previously implemented web sites features and functionality.
- Implemented server-side and client-side features.

New Energy S.r.l., Intern IT Consultant *Milan, Italy, (*March 2011 - May 2011)

- Implemented CRM Systems to accommodate clients' needs.
- Extended existing CRM systems functionality based on client input.
- Conducted testing and quality assurance on CRM systems.

Relevant Projects & Class Work

Soteria: Dreams as Currency (Work in Progress) – Untiy3D (C#)

- Built different systems for gameplay programmers to use (event queue, game state manager, object pool)
- Optimized code for more stable runtime across different platforms (mainly PC and Untiy web player)
- Constructed main code architecture and coordinated with artists for standardized art pipeline.

PrototypeVR - C++

- Built a generalized wrapper and API for the Oculus rift SDK.
- Integrated the Oculus rift SDK (DK1) with the school's internal engine, Azul, using an Adaptor pattern to minimize changes on the engine side.
- Designed the architecture of the VR Adaptor to simplify the process of prototyping quick VR solutions on most projects.
- Worked with OpenGL off-screen rendering for stereoscopic rendering and shader implementation for post-processing..
- Integrated Oculus VR head motion tracking, computed matrices for view and projection and integrated with the Azul math library.

For The Records - Perfection - JavaScript

- Developed and constructed game architecture and code design.
- Optimized code for faster and more stable execution across all browsers.
- Iterated through gameplay mechanics with designers input to stay true to the game's message.

Game Engine Development - C++
- Developed a Model archive, importer and scene renderer for the engine.
- Implemented a Hierarchy system for model import and asset management in the Engine
- Built a custom math library and memory system for the game Engine.
- Created an Animation system to read and interpret the animation data from the imported model and animate it using the Engine's other systems.

Design Patterns - C#
- Implemented the game Space Invaders from the ground up using XNA.
- Built different systems for the game, including event queue, collision detection and response, sprite system, animation system and screen management system.
- Used 10+ design patterns to ultimately accomplish the project requirements.

Multiplayer - C#/C++
- Recreated the arcade game *Omega race* with Xna to implement a 2 player networked game.
- Built a screen management system, including a lobby for game creation and joining.
- Wrote a network prediction algorithm for more smooth movement and gameplay.
- Developed a serialization and deserialization system for transmitting game data.

GPU Rendering & Shaders - GLSL
- Built, debugged and tested Shaders for school's internal Shader viewer - RenderGL - in GLSL.
- Extended functionality of RenderGL for more complicated render effects.
- Implemented an edge detection Shader in GLSL and used it to implement an Ink & Hatch shader.

Code Optimization - C++
- Developed a variable and fixed size block allocator & heap-based memory system.
- Optimized a prebuilt large particle system from 1200ms to 10ms per update.
- Updated a prebuilt math library to use SIMD for faster math computation.
- Built a load-in-place memory system as a method of avoiding allocation overhead at runtime.

Physics - C++/C#
- Built a rigid body dynamic system for 3D objects in Xna on both the PC and Xbox360.
- Implemented a terrain movement and collision in Xna from height-map generated terrains.
- Worked with Box2D to recreate the game *Angry Birds* from the ground up.
- Designed and built various physics related features including; particle systems, orthographic camera, collision response.

Skills

Engines & Tools:
Unity, Xna(MonoGames), GameMaker, Construct 2D

Development Tools:
Visual Studio 2010-2013, Eclipse, NetBeans

Programming languages:
C++, C, C#, Java, HTML, CSS, JavaScript, Python

Version Control:
Git, Perforce, Subversion

APIs & Libraries:
OpenGL, OVRLib, OpenCL

Spoken Languages:
Italian, English, Arabic

Education

Depaul University, Chicago, IL
Master of Science in Computer Game Development, March 2015

Modern Science and Art University, Cairo, Egypt
Middlesex University, Middlesex, UK
Bachelor of Science in Computer Science, June 2010