

## GAME EXPERIENCE

*Leviathan, Unreal Tournament 3* project

December 2008 – March 2009

**Lead Programmer**, 17-person team (3 programmers)

- Scheduled tasks for team members and communicated with other Leads (met all deadlines)
- Worked with game designer to clearly set and refine the implementation of game mechanics
- Added gliding model to Unreal's freefall physics system (using drag, lift, air resistance, wing resistance, and counter-forces to enhance gameplay), and three control schemes with variable controls for level designers to change

*Nightbear: The Stuffening, Unreal Tournament 3* project

May 2008 - December 2008

**Lead Programmer**, 8-person team (2 programmers)

- Programmed new UT3 weapons (gravity gun, flamethrower, swarm gun)
- Coded network-replicated in-game objects that link together and mirror each other's movement
- Implemented a character class selection system (for any number of classes)
- Aided artists with HUD work and particle systems, and level designers with Unreal Editor

*Retail Quest*

**Sole Programmer**

January 2008 - May 2008

- Programmed a 2D engine and game (simulating forces, collision detection, alpha blending, fonts)
- Integrated FMOD for music and sound using an abstract sound manager

## GAME TECHNOLOGY

**Master's Project: Frequency Space Manipulation of Voice Data**

December 2008 – June 2009

- Programmed a Fast Fourier Transform and spectral analyzer for processing a sound bite
- Coded different sound effects that are applied in frequency space (changing properties of voice)

**3D Rendering Engine**

January 2008 – December 2008

- Coded a general interface and general data structures that connect transparently to both OpenGL and Direct3D (to the depth of programming HLSL and GL assembly shaders for per-pixel light, bump, and parallax mapping)
- Developed and unit tested a math library (fixed point math, 2D and 3D vectors, matrices, quaternions) and met performance benchmarks (used for particle systems, integration, 3D rendering, and movement)
- Built a QUAKE map loader (BSP, lightmaps, textures) which does fast ray traces with the BSP
- Coded an Importer and Exporter for 3DStudioMax files and a custom file format (includes models, textures, animations)
- Unit tested and benchmarked the performance of the engine ( Engine was used in multiple projects afterward, on both Direct3D and OpenGL machines)

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## Interpreted Scripting Language

August 2008 – December 2008

- Wrote a grammar for a C-like syntax with weakly-typed variables and built-in vectors
- Coded a lexical analyzer to create tokens from language use, a parser to build a tree from the token stream, and a compiler for converting the syntax tree to custom bytecode
- Programmed a stack-based virtual machine to operate on the bytecode (supporting recursion)

## Directed Focus Study: Flocking AI and Emergent Team Behavior

August 2008 – December 2008

- Simulated unit awareness with radius tests, field of view tests, and individual unit memory
- Implemented an A\* search to compute shortest alternate path over tiled geometry
- Created modular decisions and behaviors for each unit (similar decisions create flocking)

## EDUCATION

### The Guildhall at SMU

Graduating May 2009

- Master of Interactive Technology in Digital Game Development, Specialization in Programming
- Current Overall GPA: 3.768

### California State University East Bay

Graduated December 2006

- Bachelor of Science in Computer Science
- Magna Cum Laude Graduate, Honors and Deans List
- Overall GPA: 3.87

## RELATED EXPERIENCE

Golan Technology, Sunnyvale CA

June 2005- December 2007

### Technical Support for Bluetooth Virtual Keyboard

- Fixed customer issues (Research, Diagnosis), and handle website (Install, Maintain, Forum)
- Trained external Sales Associates (Fry's, Power Positioning) and internal employees

California State University East Bay

January 2003-June 2005

### Technical Assistant

- Supported 500+ students with their computer hardware and networking challenges
- Decreased the volume of problems from 25 per day, to 4 per week, within 2-months

## SKILLS

**Languages:** C/C++, Java, UnrealScript, Assembly, HTML, Python **APIs:** Win32, Direct3D 9, DirectX, OpenGL, HLSL(FX), GL assembly, FMOD, **Math:** Calculus, linear algebra, algorithms, numerical analysis **Physics:** Newtonian dynamics: movement, collisions, numerical integration, spring-mass-dampener systems, rigid body motion, particle systems **Computer Science:** object-oriented programming, application design patterns, debugging own and other's work, A\* pathfinding, state machines **Applications:** Unreal Engine3, UnrealEd, PIX, 3DStudioMax, Adobe Photoshop CS2, Adobe Illustrator CS2, **Other:** fluent in Hebrew, leadership