

DAVID PITTMAN

david.pittman@gmail.com
http://www.dphrygian.com

(972) 762-0889
6820 Preston Rd Apt 317
Plano, TX 75024

EXPERIENCE

Gearbox Software

Brothers in Arms: Hell's Highway, Programmer Intern June 2006 – September 2006

- Refactored Gearbox's custom AI diagnostic tools to handle squads as well as individuals
- Created an AI debugging HUD for text and visualization of shot traces and covered regions
- Developed an AI HUD interface to allow users to toggle display of only the data that matters to them
- Wrote physical prediction for "backboard shot" grenade targeting interface

The Guildhall at SMU

Master's Project: Practical Development of Goal-Oriented Action Planning AI October 2006 – March 2007

- Wrote symbolic AI goals in terms of desired world state properties
- Created modular actions comprised of world state effects and preconditions
- Implemented an A* search to formulate valid and efficient action plans to satisfy AI goals
- Optimized this complex algorithm to perform well in UnrealScript

Directed Focus Study: Stealth-Oriented Game AI Demo

April 2006 – June 2006

- Simulated sensory perceptions with radius tests, frustum intersections, and BSP raycasts
- Created a FSM to model bot awareness levels and handle both individual and group behavior
- Wrote an A* search to compute shortest paths over an arbitrary waypoint graph

Grimoire, Lead Programmer

October 2006 – March 2007

- *Half-Life 2 Deathmatch* mod, 15-person team (5 programmers)
- Selected by faculty as lead programmer
- Created all-new third-person camera system
- Implemented various camera behaviors with Strategy design pattern
- Scheduled tasks for team members and wrote documentation
- Worked with game designer to define the implementation of all gameplay systems

Ransacked!, Lead Programmer and Game Designer

January 2006 – March 2006

- *Unreal Tournament 2004* mod, 11-person team (4 programmers)
- Elected by team as lead programmer
- Wrote stealth mode shader effect for gypsy character
- Programmed network-replicated randomized spawn locations for game objects
- Built lock-picking "weapon" and triggers for gypsy character

Rhapsody of the Ancients, Sole Developer

July 2005 – September 2005

- Implemented a robust 2D physical sim to model gravity, friction, and collision forces for game objects
- Programmed a 2D graphics engine (alpha blending, additive blending, parallax scrolling, normal mapping, fonts, and script-defined animations)
- Developed an easy-to-use, layer-based map editor for placing tiles and objects
- Integrated FMOD for music and sound
- Produced all art and music assets

DAVID PITTMAN

david.pittman@gmail.com
http://www.dphrygian.com

(972) 762-0889
6820 Preston Rd Apt 317
Plano, TX 75024

Interpreted Scripting Language

April 2006 – May 2006

- Wrote a grammar for a C-like syntax with weakly-typed variables and built-in vectors
- Created a lexical analyzer to convert natural language to tokens
- Implemented a parser to construct a syntax tree from the token stream
- Built a compiler for generating custom bytecode from the syntax tree
- Created a stack-based virtual machine which supports recursive function calls to execute the code

3D Rendering Engine

October 2005 – June 2006

- Created a custom abstract interface to Direct3D and OpenGL APIs to produce identical images in each
- Wrote synonymous HLSL and GL assembly shaders for per-pixel lighting and parallax mapping
- Implemented and performance-tested a custom math library (2D and 3D vectors, 4x4 matrices, quaternions, bounding volumes, parametric lines, intersection tests)
- Programmed a Quake map loader (BSP, textures, lightmaps) and fast ray traces against the BSP
- Developed a patch-based LOD terrain system

University of Nebraska-Lincoln

MIPS Processor and Application

August 2004 – December 2004

- 4-person team to develop a processor, assembler, and sample application
- Developed a five-stage pipelined processor in VHDL
- Uploaded design to Altera programmable board to run applications

EDUCATION

The Guildhall at SMU

Master of Interactive Technology in Digital Game Development
Specialization in Software Development
Current Overall GPA: 3.789

March 2007

University of Nebraska-Lincoln

Bachelor of Science in Computer Science, Minor in Mathematics
Overall GPA: 3.746

May 2005

SKILLS

Languages: C/C++, Java, UnrealScript, assembly, HTML, Visual Basic

APIs: Win32, DirectX, Direct3D, OpenGL, HLSL (FX), GL assembly, FMOD

Artificial intelligence: A* pathfinding, finite state machines, fuzzy logic, flocking and group AI, behavioral planning

Physics: Newtonian dynamics, movement, collision detection and response, numerical integration schemes (forward Euler, implicit/backward Euler, midpoint, Runge-Kutta), spring-mass systems, rigid body motion

Graphics: BSP, outdoor terrain rendering, animation, lighting, shaders, effects, scene graphs

Software engineering: Debugging, design patterns, object-oriented programming

Math: Calculus, linear algebra, differential equations, numerical analysis and algorithms

Applications: Microsoft Visual Studio .NET, Unreal Engine 3, UnrealEd, Adobe Photoshop, Windows XP, UNIX, Microsoft Office (Word, Excel, Project), Perforce, Subversion (SVN), CVS