SangHyeok Hong

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SUMMARY

Proficient graphics/engine programmer looking for an opportunity to develop memorable game

TECHINCAL SKILLS

Languages
- Proficient in: C / C++ / C# / Assembler

Graphics
- Proficient in: DirectX9 / DirectX11 / DirectX12 / Gnm(PS4) / DirectX11_x (Xbox One) / OpenGL
- Speed Tree integration and experience

Architecture
- UE3 and UE4 development
- Multi-threaded game engine development
- Multi-threaded and efficient memory manager development
- Multiplatform and multi-threaded renderer development (in PC, PS4 and Xbox One)
- Cooking and Content pipeline management system development
- Continuous Integration (CI) Build System development for multiple platforms

PROFESSIONAL SKILLS

- Experience for complete game development as porting PC game to console from scratch
- Efficient time-management
- Self-motivative developer to seek for endless learning

EMPLOYMENT

Engine Programmer   2016.03-Present

*TERA,*Bluehole.
- Worked as an engine programmer for the TERA Console Porting Project
- Lead the project as Technical Director from the beginning of the project
- Porting TERA from old UE3 to up-to-date UE3 (we called UE3.5)
- Porting TERA to Consoles (PS4 and Xbox One)
- Designed and re-implemented UE3 rendering pipeline into multi-threaded rendering supporting multi-core policy in the Console
- Implemented the Multi-Threaded Memory Manager to speed up for allocating CPU and GPU memory
- Refactored and optimized Asyncloading IO system in TERA
- Re-implemented Scaleform to supporting UI resource async-loading in UE3.5 and refactored to support multi-threading in logic and render
- Implemented Content and Cooking Pipeline for the consoles in existing CI (Continuous Integration) PC Build System
- Integrate Bink2, Speed Tree and Coherent GT (Web UI) for consoles
- Designed and Implemented the platform-dependent rendering layers for PS4 (Gnm) and Xbox One (DirectX11-x) for multi-threaded rendering
- Optimize the overall rendering pipeline for consoles
- Optimize the Particle System in UE3
- Supported UI scriptors to optimize ActionScripts by providing profiler tools

Client Programmer   2015.04-2016.03

*TERA,*Bluehole.
- Worked as a client programmer
- Implement additional features for live-contents in TERA
- Maintained the content pipeline including content cooking
- Maintained in-house customized UE3 engine tools
- Optimized the Scaleform logic and rendering and give the direction of optimization to UI scriptors
- Optimized performance of Battle Field content in TERA

DigiPen Institute of Technology, Summer Workshop Instructor   2012 - Present
- Designed course materials, taught students how to program their games in C++

PROJECT EXPERIENCE

Graphics Programmer   2014.03-2015.03
Master Thesis Project, DigiPen Institute of Technology, Redmond, WA.
- Wrote the master thesis, 'Temporal Voxel Cone Tracing with Interleaved Sample Patterns'
- Research GI (Global Illumination) algorithm for real-time games
- Research cutting-edge rendering techniques in real-time games
- Implemented the demo for the master thesis

Network Programmer   2013.09-2014.04
Master Game Project, DigiPen Institute of Technology, Redmond, WA.
- Designed and developed the network framework
- Implemented the TCP server for match-making with the IOCP
- Implemented the UDP peer-to-peer play between clients
- Implemented the Packet Generator for adding packet types easily
- Implemented the UDP Hole Punching system
- Implemented the Packet Encryption/Decryption for the security
- Implemented the networked physics for the UDP peer-to-peer play

Animation Programmer   2012.09-2013.04
Single Master Project, DigiPen Institute of Technology, Redmond, WA.
- Designed and developed the fluid engine based on DirectX11; particle-based fluid simulation / open ocean simulation
- Implemented particle system supporting the operations; vortex / spiral / bounce operations
- Implemented the ad-hoc water simulation using Statistical Wave Models

Graphics Programmer   2011.09-2012.04
Single Senior Project, DigiPen Institute of Technology, Redmond, WA.
- Designed and developed the base rendering engine for supporting DirectX11
- Developed deferred rendering system with optimized deferred lighting (with scissor test, light volume rendering, support of transparent geometry drawing, optimized memory bandwidth)
- Developed ESMs(Exponential Shadow Maps) to deferred rendering system
- Developed SSAO(Screen Space Ambient Occlusion) to deferred rendering system
- Design efficient rendering pipeline combined with deferred lighting, ESMs and SSAO

Graphics Programmer, Technical Director   2011.09-2012.04
Team Wise Monkey, Junior Project, DigiPen Institute of Technology, Redmond, WA. (Team of 3, C++)
- Designed and coded component-based 3D game engine supporting DirectX9 with message system
- Developed post-processing pre-Z pass rendering engine
- Developed advanced rendering technique (Tone shading with edge-detection, Omni-Directional Shadow Mapping, Forward lighting, Motion Blur)
- Designed structured game engine in debugging and track down easier with message system
- As technical director, delegated balanced tasks to team members and aided their debugging

Animation Programmer   2011.09-2011.12
Single Junior Project, DigiPen Institute of Technology, Redmond, WA.
- Developed animation pipeline integrated in custom game engine with supported formats .fbx and .x
- Implemented animated models following a path generated by cubic parametric curves (B-spline, Cardinal spline, Hermite, Beizer, Catmull-Rom)
- Implemented Incremental VQS transformation to animate models
- Developed constrain-based simulation of Spring-Mass-Damper

Graphics Programmer   2011.05-2011.08
Single Junior Project, DigiPen Institute of Technology, Redmond, WA.
- Developed basic rendering application with DirectX9
- Developed HDR (High-Dynamic Range)
- Developed Light Shaft (God-Ray Effect)

Game Designer, AI Programmer   2009.09-2010.04
Team of X, Sophomore Project, Keimyung University, Dague, South Korea. (Team of 2, C++)
- Created Finite State Machine and steering behavior

- Designed and created UI, display showing the play status, weapon selection.
- Created a wrapper class for FMOD which was used to load and play back sound effects and background music in 2D

EDUCATION

DigiPen Institute of Technology   **Graduation Date: April 2015**
Master of Science in Computer Science
DigiPen Institute of Technology   **Graduation Date: December 2012**
Bachelor of Science in Computer Science, Real-Time Interactive Simulation