

ANDREW AYE

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PROFESSIONAL EXPERIENCE

Amazon [Seattle, WA]
Core Consumables, Retail

Principal Software Engineering [2017(Nov)-Present]

Microsoft [Redmond, WA]
Microsoft First Party Publishing

Principal Software Engineering [2015(Sept)-2017(Oct)]

Shipped: Quantum Break (XB3,PC), Ori and the Blind Forest: DE (XB3,PC), Recore (XB3,PC)

Development: Crackdown 3 (XB3,PC), State of Decay 2 (XB3,PC), Super Lucky's Tale (XB3,PC)

- Scorpio: Participate in the working and planning group for development experience
- UE4: Lead a small team to augment vanilla UE4 to hit performance goals for 4K HDR
- UE4: Provide guidance and set goals for 3+ Scorpio titles working with 5+ studios around the globe
- UE4: Performance improvements to in development games (over 20ms on the GPU)
- Ori: Plan, schedule, and Lead team to achieve performance targets (60FPS)
- Ori: Performance evaluation and improvements to Unity 5.3

Microsoft Game Studios

Development Manager [2014(Sept)-2015(Aug)]

Shipped: Age of Empires: Castle Siege [iOS,PC]

- Engineering oversight and scheduling of Age of Empires: Castle Siege on Windows and iOS
- Manage transition of studio plan from established IP to new IP due to company re-organization
- Support team through studio closure and aid in transitions to new positions

Infinity Ward [Encino, CA]

Project Technical Director / Project Manager [2012(Jan)-2014(Apr)]

Shipped: Call of Duty: Ghosts (XB2,PS3,XB3,PS4,PC)

- Manage a team of 70+ programmers to support game and engine development
- Directed / Architect the next generation engine for CoD on PS4 / Xbox One / PC DX11
- Oversaw pioneering work on real time sub-division surfaces and displacement in game pipeline
- Responsible for managing project / engineering risk, schedule and feature list
- Collaborate with art leads to establish new process and pipeline for asset creation
- Work with production to establish project goals, schedules and milestones
- Project lead for game finalization and shipping

Lead Engineer / Project Manager [2011(Jan)-2011(Dec)]

Shipped: Call of Duty: Modern Warfare 3 (XB2,PS3,PC)

- Organized and managed code teams across multiple development studios during critical final stages
- Scheduled and managed IW code team to finalize PC SKU and day one console patches
- Worked closely with IW production and executive Activision management teams to organize submission process for simultaneous worldwide launch
- Reduced audio processing by 3.5 ms (out of a 16ms frame)
- Refactored the effects system, moved it to SPUs and optimized the system for concurrency
- Optimized the general per frame updating of entities to save 2.5ms on average

Senior Developer [2010(Feb)-2011(Jan)]

Shipped: Kinect Adventures (XB2)

- Implemented CPU, GPU, and memory optimizations, in collaboration with a small content team, to achieve our target goal of 30 FPS (from 22 FPS)
- Work on issues in the Kinect platform code, collaborating with the platform team to fix issues
- Primary person responsible for isolating and fixing crash bugs during finalization.

Obsidian Entertainment [Irvine, CA]

Lead Technical Engineer, CTG [2007(Feb)-2009(Nov)]

Shipped: Alpha Protocol (XB2,PS3), Dungeon Siege 3 (XB2,PS3)

- Architect and implementation lead for company's new AAA engine code base
- Manage and mentor a team of five people working in CTG
- Implemented the following major systems:
 - Cross-platform rendering system and render resource manager
 - Synchronization model between the main and render thread
 - Asynchronous loading system for all level assets
 - Basic scene graph for frustum culling, per-object light lists and shadows
 - Cross-platform engine job system for cpu load balancing of work units
 - Base actor class. They served to keep the system entities synchronized (animation, rendering, physics, pathing and game) and to serve as a base for the update cycle (especially movement) with a concentration on concurrent processing
 - Havok integration. Abstracted the interface to Havok so it was not a future engine requirement
 - Visual effect system that allows for significant flexibility for the artist
 - SPU programs for skinning, memcopy replacement, shadow map filtering and debug text
- Ongoing refactoring and improvements to the engine, and particularly the render system, to maintain target code quality level and performance
- Scheduling and planning of CTG's feature implementation list
- Liaison with Art and Design to confirm that we met requirements and features were delivered on time and according to specification

Senior Programmer [2006(Mar)-2007(Feb)]

Shipped Games: Neverwinter Night 2 (PC)

- Analyzed and optimized the engine to improve performance for a range of PC hardware
- Refactored parts of the rendering engine and shader code responsible for producing ill behavior, either in visual appearance or in execution time. (Render time went from 2FPS to 24-30FPS)
- Wrote a series of routines for constructing arbitrary walk surfaces based on a collection of objects (placeables) that had user defined walkable surfaces. Created a routine to validate face to face pathability that was used by the pathing system
- Troubleshooting and firefighting for the shipping product

Terminal Reality [Dallas, TX]

Simulation Engineer [2003(Oct)-2006(Feb)]

Shipped Games: Bloodrayne 2 (PC,XB1,PS2), Aeon Flux (XB1,PS2), Spy Hunter 3 (XB1,PS2)

- Integrated O.D.E. (open source physics solver) into the engine code base
- Created primitive vs triangle-mesh routines to calculate the penetration depth and normal of intersection, providing for interactions with arbitrary environments
- Created continuous collision detection (swept volume) used for high-speed and/or small geometries.
- Corrected/Improved a majority of the existing primitive-primitive penetration functions
- Implemented a new collision primitive (flat-capped cylinder) using a true mathematically defined cylinder. The common practice is to model a cylinder as an extruded octagon (or other n-gon).
- Improved constraint calculations for fidelity and realism for a low frequency updates
- Implemented limitations on the system to prevent mathematical divergence in the solution system.
- Created a debugging visualization system
- Refined collision calls for performance on console systems (specifically the PS2)
- Tweaked capsule collisions to provide predictable, stable results for soft body simulation

Lead Programmer [2001(Apr)-2002(Sept)]

Shipped Games (PC): Airport Tycoon II (Partial), Bridge Builder, Mahjong, Super Ball

- Managed a programming team of five people and communication with the out-sourced art team
- Created a data driven simulation system to allow for ease of customization and expandability
- Refined existing graphic engine for increased performance to allow for greater visual capabilities
- Created a specifically crafted physics simulation for Bridge Builder (truss structure simulation)

The Microsoft Network (MSN) [Internet]

Forum Manager [1994-1997]

- Created an online community for people interested in role playing games for MSN.
- Managed a community team of fifteen people.
- Responsible for multiple message boards, online chat-based games and event organization.

Steve Jackson [Internet]

Game Designer [1995-1997]

- Helped with the development and testing of the INWO: Subgenius.

EDUCATION

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|-------------|---------|--------------------------------|---------------------------------------|
| 1993 - 2000 | B.Math | Computer Science, Honors | University of Waterloo (Waterloo, ON) |
| 1993 - 2000 | B.A.Sc. | Mechanical Engineering, Honors | University of Waterloo (Waterloo, ON) |
| 1993 - | B.A. | Film, Fine Arts Honors | University of Waterloo (Waterloo, ON) |

CO-OP EXPERIENCE

- Programmer** [1996(May-Aug)] Canadian Space Agency [Montreal, QC]
- Implemented a simulation for testing a haptic device as a controller for the Canadian Arm.
- Programmer** [1995(Sep-Dec)] Cognos [Ottawa, ON]
- Ported code base to UNIX Platforms (HPUX, DGUX, AIX, Solaris, SunOS)
- Network Specialist** [1995(Jan-Apr)] Royal Canadian Mounted Police [Ottawa, ON]
- Engineered the RCMP PC Network for the Canadian Capital Region (Users: ~5000)
- Programmer** [1994(May-Aug)] Royal Canadian Mounted Police [Ottawa, ON]
- Developed an in-house program for reducing police oriented paperwork
- Research Assistant** [1990 (June-Aug)] Atomic Energy Canada [Chalk River, ON]
- Assisted in the development of an aqueous gamma radiation probe