

Nathan Lacey

Software Engineer

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Specialties

C/C++, Unreal Engine 4 (C++, Blueprints, Behaviour Trees), Physics (Custom C++ Engine), Unity, Networking(winsock, asio, unity), Protobuf, XML, JSON, and DirectX11.

Education

LaSalle College Vancouver, Vancouver, BC, June 2015 - September 2018

Bachelor of Science in Game Programming

Team Projects

The Gauntlet Prismatic, First Person Action Game, Unreal Engine 4 (C++), April 2017 - June 2018

Lead Tools Programmer

- Solely responsible for procedural map generation system
 - Data driven, easily customizable map generator
 - Uses Marching Squares for determining vertex and index information
 - Uses Catmull-Rom Splines for curved walls
 - Determine vertices, indices, normals, and UVs for map
- Created architecture for generic player action system
- Implemented Behaviour Trees and Animation logic for a melee/ranged AI unit

Castle Guard, First Person VR Tower Defence, Unreal Engine 4, December 2017 - April 2018

AI/Gameplay Programmer

- Implemented generic spline pathing system for game AI
- Implemented data driven AI spawning system
- Optimized bow and arrow gameplay features

Wombat Combat, Online Multiplayer Card Game, Unity, November 2016 - July 2017

Lead Programmer

- Implemented gameplay systems
- Implemented networking functionality
- Worked on card effect system

Personal Projects

C++ DirectX11 Graphics Engine, October 2016 - present

- Wrapped DirectX11 features for displaying 3D graphics
- Implemented multipass rendering, fog shader, post-processing
- Implemented Networking with Winsock, UCP/TCP
- Implemented Entity-Component System
- Created a meta-reflection system
- Created a model importer using the assimp library

Tüdey Physics, Custom 2D C++ Physics Engine, January 2018 - present

- Circle, AABB, and OBB collision detection and resolution
- Convex Polygon collision detection and resolution using Separating Axis Theorem
- Implemented physics constraints, spring and distance using Jacobian Matrix
- Implemented collision channel system
- Optimized collision detection through broad and narrow phase detection
- Implemented extendable generic collider system
- Implemented a customizable behaviour collision behaviour system
- Created 2D math library

Work Experience

Programming, Math, and Physics Tutor, LaSalle College Vancouver, September 2017 - June 2018