

VATSALYA YADAV

Graphics/Rendering Engineer

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SKILLS

Languages

C/C++,
GLSL,
C#, Lua

Rendering APIs

Vulkan,
OpenGL

Game Engines

Unreal Engine 5,
Unity3D,
Cocos2dx

Development Tools

RenderDoc, Git, Jira,
Visual Studio,
Nvidia Nsight Systems

Maths and Physics

3D Math,
Spline Curves,
Newtonian Dynamics

PROFESSIONAL EXPERIENCE

Junior Programmer | Unannounced Title

July 2019 - November 2020

GodSpeed Games - Pune, India

First person Platformer Game made using Unreal Engine 4 utilizing both Blueprints and C++.

- Created gameplay mechanics like Grapple Hook, Wall Running and character movement.
- Responsible for programming Human-like Character Animations by leveraging Unreal's Animation Tools.

Optimizing and porting games to Nintendo Switch platform using Unity3D in C#.

- Optimizing shaders based on performance metrics received from Nintendo's SDK and Unity profiling tools.
- Migrating Unity PlayerPrefs save data system by parsing to JSON to support save-load within Switch.
- Fixing bugs and optimizing memory issues using Nintendo's SDK crash dumps and profiler metrics.
- Responsible for adding Input-Mapping to Switch Joy-cons, Pro Controllers and touch screen from the game's Keyboard and Mouse Inputs.

SOLO PROJECTS

Engine Programmer | Animation Engine

August 2023 - December 2023

Custom 3D Rendering Engine made using OpenGL with a focus on Skeletal Animation.

- Integrated dynamic character movement and life-like animation using OpenGL and C++ with Assimp Library.
- Implemented Hermite Spline for smooth movement of character animation along a path.
- Added Inverse Kinematic support for bones using industry standard FABRIK algorithm.

Graphics Engineer | Vulkan Real-Time Ray-Tracing

May 2023 - July 2023

Custom Renderer with Real Time Ray-Tracing, History Tracking and Denoising.

- Implemented Ray-Tracer using the Monte-Carlo Path Tracing Algorithm.
- Computed History Tracing for each frame using Selective Weighted Bi-linear Interpolation method.
- Final Denoising step is implemented using Compute Shader via the À-Trous algorithm.

Software Developer | Concurrent/Parallel Trie Data Structure

March 2023 - April 2023

Created Concurrent version of Trie Data Structure using `std::threads` and `mutex` based locks.

- Made the Data Structure 2.5 times faster than the Serialized version for big data sets of 10 million words.
- Parallel Trie increases scalability of applications that require fast access and modification of structured data.

TEAM PROJECTS

Technical Lead/Engine Programmer | Custom Game Engine

August 2022 - December 2022

Custom 2D/3D Game Engine built with C++, OpenGL, and ImGui with Multithreading.

- Integrated Lua based Scripting Engine to implement gameplay functionality.
- Created Thread Pool to manage lifetime of multiple threads for data loading, input and logger systems.
- Created Save-Load sub-system on engine side to save data in between program execution using JSON.

Engine/Tools Programmer | Dodge Brawl

January 2023 - April 2023

Custom 2D/3D Game Engine built with C++, OpenGL, and ImGui with Multithreading.

- Created Debugging & Visualization Tools to monitor performance, FPS and memory usage.
- Integrated Scope Based Profiling Tool to monitor engine performance at runtime.
- Integrated State Machine Pattern and engineered Pushdown Automaton to create
- Achieved creating a competitive couch game which supports up to 4 players.

EDUCATION

Master of Science in Computer Science | Graphics Concentration

Expected Graduation April 2024

DigiPen Institute of Technology - Redmond, WA

Bachelor of Engineering in Computer Science and Engineering

July 2019

Siddaganga Institute of Technology - Tumkur, Karnataka