Aseem Apastamb

Software Engineer

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Skills:

- **Languages:** C++, C#, Lua, C, GLSL, Python, Java
- **Other Software:** Unity, Unreal, RenderDoc, OpenGL

Summary:

Highly motivated software engineer with a strong foundation in object-oriented programming. Experienced in game development and graphics programming. A passionate and hard worker with excellent communication skills, and a deep desire for professional and personal improvement.

Projects:

Gameplay/Engine Programmer | 3D Game – "Drifty Thrifty Bang Bang" **Aug '22 – Apr '23**

- Developed in a custom engine using C++, Lua, and OpenGL
- Programmed gameplay mechanics for physics-based car controller, gadgets, and enemy AI like obstacle avoidance
- Improved development iteration time by implementing a Lua scripting system for gameplay and behaviours
- Automated serialization of common data types by integrating a C++ type reflection system
- Prototyped screen-space motion blur post-processing effects to improve visual gameplay experience

Graphics Programmer | 3D Rendering Framework **Jan '23 – Apr '23**

- Created a performant renderer using deferred shading, allowing for a significant number of local light sources
- Implemented Variance and Moments Algorithms for soft shadowing, improving visual depth and fidelity
- Combined physically-based shading and image-based lighting, including global tone mapping and colour space conversion of values from HDR images, providing a more realistic appearance
- Further improved visual fidelity by including ambient occlusion, which adds contact shadows and darkened edges

Graphics Programmer | Non Realtime Raytracing **Jan '23 – Apr '23**

- Created a CPU-based raytracing framework that renders a static 3D scene composed of complex meshes and geometric primitives
- Improved speed of convergence by 1000x using Bounding Volume Hierarchy and Monte Carlo path sampling techniques
- Enhanced realism by using micro-facet BRDF calculation to achieve reflection, transmission, and refraction of light
- Extended framework to include effects like depth of field and image-based environmental lighting

Gameplay/Engine Programmer | 2D Puzzle Platformer – "Lights Out" **Jan '22 – Apr '22**

- Designed player gameplay mechanics and implemented these features in the C++ engine
- Implemented key engine systems including input, physics, level editor and asset serialization
- Contributed to level design, and integrating an Entity-Component-System architecture pattern

AI Programmer | Behaviour Tree - Planning System Hybrid **Jan '22 – Apr '22**

- Showcased advanced AI in games using C# scripts in a Unity3D framework
- Architected a hybrid of Behaviour Trees and Planning Systems for decision making
- Implemented the simplicity and control of Behaviour Trees with the flexibility of Planning Systems

Game Programmer | Unity3D Personal Projects **Dec '20 - Jan '21**

- Box Shooter – 3D FPS, demonstrated player input, interactive UI, basic scripting, and level design
- Roller Madness – 3D ball rolling game, showcased user input, physics-based movement, and enemy behaviour

Research Publication: **Jun '21**

Co-authored a paper on data analysis and machine learning called *Investigating the Impact of Data Analysis and Classification on Parametric and Non-Parametric Machine Learning Techniques: A Proof of Concept* – published for Springer's 3rd ICCNCT 2020

Education:

Master of Science in Computer Science (GPA: 3.92) **Graduated Apr '23**
DigiPen Institute of Technology – Redmond, WA, USA

Bachelor of Engineering in Computer Engineering (GPA: 3.5) **Graduated Nov '20**
Maharashtra Institute of Technology (Savitribai Phule Pune University) – Pune, Maharashtra, India