Aman Sachan

amansachan.com github.com/AmanSachan1 aman9740@gmail.com 1-267-361-8276

Skills

Graphics: Vulkan, CUDA, WebGL/OpenGL, DirectX 11, GLSL/HLSL, Threejs, Maya API
Programming: C/C++, C#, Javascript, Python, HTML/CSS
Software: Unity, Unreal, Maya, Houdini, RenderDoc & other profilers
Engineering Tools: Visual Studio, Qt, Git, Perforce, CMake

Experience

Software Engineer, Havok, Microsoft Aug, 2018 – Present

- Developed features and improvements across the Havok SDK suite focussing primarily on the Visual Debugger (VDB), Physics, and Havok Graphics (HKG); but also contributing to the UE4 integration, Cloth, and AI;
- Support developers by tracking & fixing bugs, implementing custom features, and identifying client errors
- Manage relations with clients; Identify risks & set expectations; Use feedback to drive product roadmaps;
- Helped ship multiple AAA titles across many studios & game engines;

Teaching Assistant, University of Pennsylvania | Procedural Graphics (CIS 566) Jan – May, 2018

Research Assistant, SIG Center for Computer Graphics May – Aug, 2017

Subliminally Directing Gaze in VR under Dr. Stephen Lane at the University of Pennsylvania

- Developed a VR game that used visual stimuli to subliminally (without conscious perception) direct user attention
- Supervised & taught an undergraduate intern working on the project; Implemented a realtime CMA-ES algorithm

Education

University of Pennsylvania – MSE Computer Graphics | *GPA: 3.57/4.0* May, 2018
Visvesvaraya Technological University – BE Electrical and Electronics Engineering July, 2016

Projects (See more projects at amansachan.com)

Vulkan Cloudscape Rendering ◈ *C++, Vulkan, GLSL, HLSL* ◈ *Group Project* Nov – Dec, 2017

- Realistic cloud rendering in under **3ms/frame** on a notebook GTX 1070.
- **Responsibilities**: **Vulkan framework**; 2D and 3D texture support; **Ray marching** of cloud shapes; **Reprojection** and cheap sampling optimizations; **Post-Processing** (god rays, tone mapping, **temporal anti-aliasing**);

Monte Carlo Path Tracer ◈ *C++, CUDA, OpenGL* Feb – April, 2017

- *CUDA Optimised:* **Material sorting; Stream compaction; First bounce caching**; **Subsurface scattering**; Anti-aliasing
- *CPU Generalized:* **Multiple importance sampling**; **Volumetric** rendering; **BVH acceleration**; Multi-threading; **Micro-facet** materials; Fresnel reflectance model; Realistic modeling of Light sources; Thin Lens Camera Models

Jello Simulator Using FEM ◈ *C++, Houdini* ◈ *Group Project* March, 2018

- The simulation uses the **Finite Element Method** with a **Fixed Corotated Elastic model**
- Implemented **collisions**, fixed point constraints, in a **data driven architecture**

Clustered Deferred & Clustered Forward Plus Shading ◈ *WebGL, Javascript, GLSL* Oct, 2017

- **Real-time (60+ FPS)** rendering of more than **2100 dynamic lights** in complex scenes using a **compacted g-buffer**

Hand Of God ◈ *Unreal Engine 4* ◈ *Group Project* Oct, 2017

- Asymmetric co-op game **merging** traditional **non-VR and VR gameplay**.
- Implemented AI, agent controls & actions, weapons, and helped setup networked gameplay.

Mesh Editor ◈ *C++, OpenGL* Nov, 2016

- Implemented an interactive **Half-Edge Mesh data structure**, **Catmull-Clark Subdivision**, **Interactive Skeleton** Structure, **Skinning**, and Shader Based **Skin Deformation**

CUDA Rasterizer ◈ *CUDA, C++, OpenGL* | **Tile based** & **Scanline** Rasterization in **Real-time (60+ FPS)** Oct, 2017

Leadership and Awards

Project Helios – 2016
Project Lead; Awarded Rs. 1,20,000/-
Finalist of KPIT Sparkle & Engineer Infinite

Earthian – 2014
Project Lead
Awarded Rs. 1,50,000/-

Vidyut 2k14
Head of Sponsorship;
Prime Coordinator & Public Spokesperson