AMAN SACHAN

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SKILLS

PROGRAMMING
➢ C/C++
➢ GLSL
➢ MEL
➢ Javascript
➢ C#
➢ HTML/CSS
➢ Java

GRAPHICS
➢ CUDA
➢ OpenGL, WebGL
➢ Maya API
➢ Threejs

SOFTWARE
➢ Git
➢ Unity
➢ Maya
➢ Qt
➢ Visual Studio

COURSEWORK

➢ GPU Programming (Fall '17)
➢ Advanced Computer Graphics
➢ Procedural Graphics
➢ Game Design (Fall '17)
➢ Computer Animation
➢ Data Structures and Algorithms

LEADERSHIP & AWARDS

HELIOS - 2016
◈ Project Lead; Received Rs. 1,20,000/- in funding
◈ Finalist of KPIT Sparkle & Engineer Infinite

EARTHIAN - 2014
◈ Team Lead; Awarded Rs. 1,50,000/-

VIDYUT 2k14
◈ Prime Coordinator; Head of Sponsorship; Public Speaking

EDUCATION

UNIVERSITY OF PENNSYLVANIA, Pennsylvania, USA   May, 2018
M.S.E. COMPUTER GRAPHICS AND GAME TECHNOLOGY
GPA: 3.45/4.0

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, Bangalore, India   July, 2016
B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

EXPERIENCE

SIG CENTER FOR COMPUTER GRAPHICS   May - Aug, 2017

RESEARCH ASSISTANT ◈ C#, Unity ◈ Oculus DK2, SMI Eye Tracker
SUBLIMINALLY DIRECTING GAZE IN VR under DR. STEPHEN LANE
- Implemented a real time **CMA-ES algorithm** (a machine learning algorithm)
- Developed a **game in Virtual Reality** that used visual stimuli to subliminally (without conscious perception) direct user attention
- Supervised and taught an undergraduate intern working on the project

PROJECTS (See more projects at amansachan.com)

GPU BOID FLOCKING ◈ C++, CUDA   Sept, 2017
- Implemented Craig Reynold's crowd simulation algorithm to model flocking behavior
- Visualize **1.6 million particles** running at **60 FPS** on a notebook GTX 1070

CPU MONTE CARLO PATH TRACER ◈ C++, OpenGL   Feb - April, 2017
- Supports **Volumetric Rendering**, **Multiple Importance Sampling**, **BVH Acceleration** (9800% speed up), **Multi-Threading**
- Handled materials with **Micro-facet** surfaces and **Fresnel reflectance** models;
- **Realistic** modeling of **light** sources and Thin Lens **camera models**;

INTERESTING LEVEL GENERATOR ◈ Javascript, WebGL, GLSL, Threejs   April, 2017
- A procedural **multi-layer dungeon generator** that generates levels based on a voronoi-like graph after it has been heavily modified by various filters to create interesting level layouts
- Implemented: a **Realistic Fog** shader; Biome and Elevation dependent **Terrain** on the GPU
- Implemented a controllable **Crumbling Pathway** aesthetic

GRAVITY WELLS ◈ C#, Unity   Sept, 2017
- A puzzle game that involves slingshotting your ship using black holes
- Designed and Implemented the gameplay and physics

IMPLICIT SURFACES ◈ Javascript, WebGL, GLSL, Threejs   Feb, 2017
- Generated **metaballs** in **real time** using the **marching cubes** algorithm
- **~1700 dynamic triangles** running at **60 FPS** on a GTX 1070

ART OF COLLISIONS ◈ Group Project   ◈ C++, MEL, Maya API   March - April, 2017
- Implemented a particle based rigid-body simulator based on the paper, "**Unified particle physics for real-time applications**", by Macklin, Muller, Chentanez, and Kim
- Jointly implemented **Shape Matching Constraints** and **Position Based Dynamics**
- Implemented the conversion of arbitrary meshes into particle groups

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**