

Skills

Languages	Primary: C++ 11, C, GLSL, java Familiar: LUA, HLSL, ActionScript, C#
Game Development	Component Based Engine Architecture, Solid vector & matrix math, Archetype, Data Driven Object Creation, Delegate Based Messaging System, AI state machines, A* & JPS+
Graphics	Graphics rendering & game asset pipeline, Oculus SDK, Modern shading techniques like Deferred Shading, Physically Based Lighting, Ambient Occlusion, Shadow & Reflection Maps, Vertex, Pixel, Compute & Geometry Shader Programming
Character Animation	Tools development for animations, Transformation with VQS and VQM structure, Skinning, Forward kinematics, Skeletal animation, Blending, Inverse kinematics (IK) - Cyclic Coordinate Descent (CCD), Joints constrain satisfaction, Character motion
Tools	Visual Studio, Git, Gerrit, Redmine, Unreal Engine 4

Professional Experience

Kratin Software Solutions

May 2012 – Jul 2014

- Developed Android MDM solution for dual persona mobile devices in an agile working environment.
- Responsibilities includes building framework, OS customization, Designing systems, bug fixing, code review.

DigiPen Project-Fun

Jun 2015 – Aug 2015

- Assisted students to understand the concepts in Artificial Intelligence class and helped them in projects.

Projects

Character Animation (Solo Project)

- Developed custom C++ framework to load 3D model, bones & animation key frame information.
- Implemented data structure utilizing quaternions & VQS for hierarchical representation of joints.
- Wrote algorithm for transformation with LERP & SLERP to achieve smooth animation between key frames.
- Generated curved path using bezier curve algorithm for moving the articulated object.
- Controlled skidding and sliding by finding the proper balance between animation speed and motion.
- Programmed CCD algorithm with constrain satisfaction for object grabbing Inverse Kinematics.
- Successfully dealt with different coordinate systems for IK, Orientation control and skinning.

Graphics Engine (Personal Project)

- Developed a demo engine for experimenting with different shader effects and graphics techniques.
- Programmed perlin noise to create sun shader which gave a realistic solar flares.
- Implemented crepuscular ray shader to add volume to the light rays from sun.
- Wrote template based delegate messaging system that results in easy communication between systems.

A Little Bit (Team Project) Team Size: 5

- Role: Graphics programmer. Responsible for overall visual aspect of Oculus game.
- Implemented deferred rendering based graphics engine with post processing effects & game assets pipeline.
- Achieved GPU based pixel perfect object picking in 3D game world with gbuffer.
- Optimized transformation calculations and shader system to improve frame rate.
- Programmed shaders for cloud noise effect, lighting, edge highlights, lasers and particles.
- Collaborated with others on different disciplines for engine development and bug fixing.
- Successfully coped with: Maintaining 90 FPS for dual screen of Oculus, UI design, Simulation Sickness.

Education

BS- Information Technology	Nagpur University	2007 - 2011
MS- Computer Science	DigiPen Institute of Technology	2014 – Expected Graduation April 2016