ROHAN CHABRA

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Career objective

To build a career as a computer graphics developer in the graphics development industry to make a significant contribution in the development of next generation computer graphics technologies.

Education

Computer Science Graduate Student (Fall 2014)

- University of North Carolina at Chapel Hill

Bachelors of Technology in Information Technology (June, 2012)

- Jaypee Institute of Information Technology, Noida, India

Professional Expérience

- **Research Assistant at UNC Chapel Hill (August 2014 – Present Date):** Working with Prof Jack Snoeyink on Degree Driven Geometric Algorithms.

- **Collaborating with Walt Disney Imagineering:** Working for Disney Imagineering on Sound Propagation and Evaluation Technologies under guidance of Prof Dinesh Manocha and along with Carl Schissler a graduate student at UNC Chapel Hill.

- **Gameplay Programmer at Ubisoft Entertainment Pvt Limited India (December 2012 – May 2014):** Worked on MotoHeroz, a mobile game available on Apple App store and Google Play store. Besides working on the game play I also handled game engine related tasks such as managing the rendering pipeline and integration of OpenAL sound API.

- **Intern Game Programmer at Ubisoft Entertainment Pvt Limited India (June 2012 – December 2012):** Worked on couple of undisclosed projects. In the first project I handled tasks such as developing a flash game using Action Script 3 and a game design assistant tool in C# for the game designer. In the second project I worked on NDK (Native Android API), and also developed network and file download utilities for this application in Java.

- **Intern at Game Loft Pvt Limited India (May 2011 – July 2011):** Worked on an online internship project to develop a 3D Carom game using VC++ and OpenGL. The game development comprised of Physics, Artificial Intelligence and various Computer Graphics techniques such as shadow mapping and reflections to bring realism in the game.

Research / Key Projects

- **Road Crossing Simulator for Visually Impaired: -** The goal of this application is to train visually impaired users to cross the road. Geometric based Sound Propagation is used inside the simulator that accounts for early reflections, late reverberations and sound scattering. Tasks such as generation of cars and other ambient sounds are still in progress.

- **Estimation of Physical Properties of Rigid Bodies:** - The goal of this project is to estimate physical properties such as coefficient of restitution, friction etc. Initially the physical bodies are tracked using Microsoft Kinect; the noise in the data is removed with help of repeated physics based simulations. This helps in making a better estimate of these physical properties.

- **Robust Particle Tracking for Monte Carlo radiation transport simulation: -** The natural algorithm to solve this problem fails in few critical cases where surfaces come very close to each other or share a tangent contact. To solve these issues our algorithm tracks all the surfaces to be hit by a ray and also controls the numerical precision used for all the calculations.

- **Visualization and Debugging tool for Ray Tracing:** The objective of this tool is to help users to visualize and understand how ray tracing works. The tool allows user to view primary and secondary rays, view BVH nodes and select specific region only where the rays will fall. The underlying real time ray tracing is achieved using OpenCL GPU Programming.

- **Engine:** This is a framework that supports 3D Rendering and 3D Physics(Bullet physics engine). The rendering module currently supports hardware rendering based on OpenGL and GLSL (Attempt to include Software Rendering and Ray Trace Rendering is being made).

- **Fluid and Cloth Simulations**: - Real time implementation of both fluid and cloth particle system using GLSL on GPU. Navier Stokes Equations and Verlet Integration are used for fluid and cloth simulations respectively.

Technical Skills

- **Programming Languages: -** C, C++, Java, MATLAB, Action Script 3, C# , Objective C, Lua Scripting, HTML and PHP.

- **Graphics libraries and Game Engines: -** OpenCL, GLSL, CUDA, OpenAL, OpenGL, Unity 3D and XNA.

Achievements

- Reached the Asia regional round of ACM ICPC held at Gwalior 2009.

- Won 2nd prize in programming contest held at IIT Kanpur 2006 in TECHRITI.

- Was awarded a certificate of appreciation for standing 3rd at KSHITIJ 2010, IIT Kharagpur in a robotics event XPLODE.

- Was awarded a certificate of appreciation for standing 3rd at TRYST 2010, IIT Delhi a robotics event MOVE ON.