

Venkat Krishnaraj

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Website:

<http://digitalfodder.com> (Personal)
<http://www.glu.com> (Glu Mobile)

OBJECTIVE A position as a graphics developer that allows me to create next generation applications

EDUCATION **Cornell University**, College of Engineering, Ithaca, NY **Graduated : May 2005**
Master of Engineering, Computer Science
- GPA 4.0 (Spring Semester) and 3.73 (Fall Semester)
Relevant Courses: *Advanced Rendering, Physics based Rendering, Computer Animation, Advanced Computer Animation, Machine Vision, Machine Learning and Computer Networks.*

Mumbai University, College of Engineering, Mumbai, India 2000 – 2004
Bachelor of Engineering, Information Technology
- 72% (First Class), Ranked in the top 5%
- Scholarships from the Tata Group of Companies, 2001 and 2002 for academic performance
Relevant Courses: *Computer Graphics, AI, Software Engineering, Computer Vision and Distributed Systems.*

TECHNICAL SKILLS

Programming:	C++ (5 yrs), Java (5 yrs)
API's used:	Win32(2 yrs), MFC(1 yr), Brew(3 yrs), DirectX(1 yr), OpenGL ES(2 yrs), HLSL(1 yr), 3D Studio Max Plugin API (1.5 yrs), J2ME (1 yr)
3D Software:	3D Studio Max(4 yrs), Maya (1 yr)
Web and Databases:	Php (1yr), Oracle and MySQL(1 yr)
Other:	Photoshop, Premier, Flash MX and conversant with MATLAB
Mathematics:	Matrices, Vectors, Numerical Methods, Differential Equations and Statistics

WORK EXPERIENCE **Glu Mobile**, San Mateo, CA **Sr. Software Engineer** 2008 – Present

Engine

- Designing and implementing a **3D skeletal animation system** with support for blend controllers and inverse kinematics (current project)
- Export plugins for 3D Studio Max for bringing weighted meshes, skeletons, and animation sequences into the engine

- Designed and implemented a system that allows a designer to express a game as a **finite state machine in XML** and scripting individual components using behaviors (based on the **strategy design pattern**)
- The system features an **IDE** programmed in MFC (C++) using the **Model-View-Controller** pattern which allows designers to develop and debug the script without changing a single line of code
- The system was first used on Dark Knight and is now being used for other current / future titles

Gameplay

- Lead Engineer for the game **The Dark Knight** (Brew, Windows, Windows Mobile and N-Gage)

Glu Mobile, San Mateo, CA **Software Engineer** 2005 – 2008

Engine

- Implemented base **animation system** which supported **animated transforms** and **texture animations**

- Designed and implemented a **BVH scene partitioning** algorithm to optimize frustum culling, which made scene traversals' complexity $O(\log n)$ from $O(n)$

- Designed and implemented a **Game track** system which allows **2D Gameplay to be run on rails** in a 3D space
- Implemented a 3D Studio Max plugin to import a **2D gameplay plane (as described in Mappy)** and project it along a spline in 3D space which allowed artists and designers to do level layout in 3D
- Implemented a 3D Studio Max plugin which exported this spline or 'Game Track' along with camera animations along certain points which were represented in translation vectors and **rotation quaternions** to enable s-lerp interpolation of rotations of the camera and **collision information** of objects placed around the spline
- The system was first used on Alpha Wing 3D, and was then used for Transformers 3D

Gameplay

- Lead Engineer for the games **Transformers 3D** (Brew, OpenGL ES) and **Alpha Wing 3D**(Brew, OpenGL ES)
- Gameplay programmer for the following titles: **Call of Duty 4**(Brew), **Diner Dash 2**(Brew), **Diner Dash** (J2ME), **Driver: Vegas** (J2ME)

Cornell University, Ithaca NY **Student Programmer** 2004 – 2005
- Development of the Website and Content Management Modules for the School of Hotel Management
- Tools used are predominantly PHP/Perl and Oracle/MySQL

Lucent Technologies, Mumbai, India **Project Leader** 2003 – 2004
- Developed a LAN version management system, Ubiquitous Communicator for software projects involving lot of interactivity using the Win32 API and Winsock API (similar to Microsoft Exchange Server)
- Key areas of effort were in developing the shared whiteboard, project management modules and software engineering issues to cater to needs of the employees and write maintainable code in a non-OOP Win32 API

South Indian Education Society, Mumbai, India **Web Administrator** 2000 – 2003
- Conceptualized, designed and implemented a complete solution for an online presence for a Management institution (SIESCOMS) and 11 Institutes under the SIES umbrella
- Designed a VRML walkthrough of the SIES campus

ACADEMIC PROJECTS

Jungle Adventures, The movie (Program of Computer Graphics) 2004 – 2005
- Creation of a short computer animated film which involves all the steps from concept art to the final movie
- Maya used extensively for the modeling, rigging and animation of the characters
- Other tools like Adobe Premier, Adobe Photoshop used for post production and special effects

3D Game Engine, Master of Engineering Project 2004 – 2005
- Developing a simple 3D Game Engine upon DirectX / HLSL Framework using C++
- Implementing a simple game on top of the engine to show the engine features
- The games are written for the game engine by combining XML and .X meshes

Global Illumination Renderer 2004 – 2005
- Uses the **radiance model** to model light (physically accurate) to generate photorealistic images
- Implemented Monte Carlo sampling, Cook-Torrance and Ward models to model the objects
- Implemented a K-dimensional tree as an acceleration structure to speed up by almost 300%.

Blox, The movie (Program of Computer Graphics) 2004 – 2005
- Understanding the basics of computer animation and create an animated film
- 3D Studio Max being used extensively for the modeling of the character 'Blox', and animation of the movie

Deep Shadow Map Project 2004 – 2005
- Implemented Shadow maps and Deep Shadow Maps in hardware to yield about 80 fps on a GeForce FX chip
- Tools used: DirectX 9 framework, Win32 API and HLSL

Gamers' Corner 2003 – 2004
- Designed and developed 4 games in C / C++ - Tetris - Snake - NFS 0.1 - DX-Ball
- Implemented a multiplayer environment in Snake and DX-Ball

PUBLICATIONS

E-Police
- An invention of an Anti-Piracy system. e-Police aims to stop software piracy without intruding on user privacy.
- Inked the paper under the guidance of Dr. Sharad Wagle

- Venkat Krishnaraj, Shashidar Ette et al.; "Ubiquitous Communicator"; Technical Report; Lucent Technologies India; 2004