

# Mark McKay

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## Objective

To create amazing computer games and animations. While much of my past work has involved writing tools, I also wish to bring my artistic talents to bear and am looking for more of a technical artist position for my next placement. I am particularly interested in writing shaders.

## Previous work experience

### Goldtooth Creative (July 10 - Jan 11)

Created a Maya plugin that allows artists to view cast shadows and SSAO (screen space ambient occlusion) in the viewport during modeling. Also allows for fast movie creation using Maya's playblast. This was used to render shadows in all cut scenes for Deus Ex: Human Revolution.

Screenshots: <http://www.kitfox.com/projects/cgFXPlugin/index.html>

### Heavy Iron Studios (Sept 07 – Apr 09)

Created and maintained in-house tools used by titles developed by studio, including Pixar's Wall-E the Video Game, Pixar's Up the Video Game, and SpongeBob Cooler Times.

#### Shaders

- Wrote new and maintained existing GPU shaders for PC, Xbox 360 and PS3
- Wrote fur shader for texturing dog fur. Included anisotropic lighting and varying fur direction

#### Maya

- Adapted Collada 1.4 plugin from Feeling software for exporting game assets
- Rewrote from scratch the CgFX shader plugin
  - New CgFX plugin encapsulated all CgFX state in a single material. Extended the new MPxHardwareShader, and employed tricks such as lazy parameter loading, occlusion and identifying duplicate textures to improve speed. Also created a Mel editor for attribute pane.
  - Plugin was used to texture all geometry in the Maya viewport. Viewport rendering improved enough that users could navigate entire levels at around 5 - 20fps. Also handled transparency and backface culling issues. More stable than both Maya's CgFX plugin and Feeling's Collada 1.4.
- Researched and provided support for the studio's Maya upgrades, first from Maya 7.0 to 2008 and later from 2008 to 2009
  - Upgrade from Maya 7.0 to 2008 included switching from Maya's CgFX shader to custom CgFX shader. Wrote Python script to open every existing Maya asset and replace old shader with new one

#### Editor

- Maintained the company's inhouse game editor
  - Fixed consistency problems with object ids, links between objects, and repository access
  - Ported inhouse PC game viewer for use as external game platform
  - Found and fixed memory leaks and logic errors in the editor

- Wrote C# tool to let artists convert from our engine's coordinate system to Maya's and visa versa. This helped artists to attach game objects to points relative to the bones of skeletal meshes.

#### Other

- Acted as liaison with artists, gathering ideas for improvements in existing tools
- Assisted artists with technical Maya and Photoshop issues.
- Provided technical advice for solving art problems

#### **Name Available Upon Request** (Dec 04 – Aug 07)

- Sports training software. 3D bike-through of virtual Washington DC. Data from USGS sampled to determine height of terrain.

#### **Mr X Fx** (Jun 04 – Oct 04)

- Maya tools programmer. Assisted 3D artists in creating special effects for feature films.

#### **AutoRef Systems** (Dec 04 – Feb 05, Nov 03 – Feb 04, Jan 03 – May 03)

- Developed client program in Java3D and Swing to display animated trajectories of shots in a tennis game.
- Wrote HUD to summarize shot data and display statistics.
- Wrote server side app to allow easy administration of cameras that monitored the tennis game.
- Created networking modules to allow client / server communication.
- Created algorithm to correct a fish-eye lens effect on incoming image data

#### **Insomniac Games** (May 03 – Aug 03)

- Gameplay programmer for Ratchet and Clank 2: Going Commando. Also developed lighting and atmospheric effects.

## Open Source

Volume Viewer – <http://volumeviewer.kenai.com>

A JOGL based control that lets the user view and manipulate volumetric data in Java. The demo available on the site displays MRI data.

SVGSalamander – <http://svgsalamander.dev.java.net>

SVGSalamander is an SVG parser, viewer and animator. It consists both of programs to load and display SVG content, and as a library that can be used to display SVG in any Java application. I originally wrote this to gain insight into creating graphics engines, as well as to provide a useful way to import and display vector graphics in Java. It also addresses some of the shortcomings I perceived in Batik, the other major SVG viewer for Java. Since then, the community has grown, and my library is used in a number of projects and handles many varieties of SVG documents.

Gazelle – <http://gazelle.dev.java.net/>

An earlier project, Gazelle is an interactive vector editor and animator. It lets you create simple vector graphics and animate them using key frames. Demonstrates important concepts in IDE design.

## Self Directed Projects

The Puzzle Corner - <http://www.kitfox.com/puzzlecorner/index.html>

This is program that daily generates and publishes a variety of newspaper style puzzles. Technologies used

include SVG, XSLT/XSL-FO.

## **Other**

- Was a speaker at JavaOne 2007, delivering part of a talk on Swing and vector graphics in Java. (Session TS-3755)
- Created a Maya plugin to export scene and character data to custom file format and a corresponding importer and player based on Java3D. Included CPU skinning and preserved TRAX info to allow smooth animation blending.

## **Education**

University of Waterloo, Waterloo Ontario Canada

- Graduate with an Honors Bachelor of Mathematics (Computer Science)
- Obtained minor in Fine Arts, Visual Arts Studio (included three courses in computer art and 3D animation)
- Fourth year studies included classes in writing ray traces, AI and compiler design

## **Interests**

I enjoy cycling and like to draw or play piano in my spare time. I also have an interest in improvisational theater and have taken classes with Second City, Theatre Sports Toronto and Theatre on the Edge (Waterloo).