

Curriculum Vitae - Mike Boers

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EDUCATION and EMPLOYMENT

- Sept. 2011 to Dec. 2011 **Teaching Assistant** for CS314 “Computer Graphics: Rendering” at UBC.
Developed practical assignments and directed labs, focussing primarily on the OpenGL pipeline, but also covering the basics of raytracing.
- Sept. 2011 Accepted to **MSc Graduate Program** in Computer Science at UBC.
- May 2011 to present **Research Assistant** in PSM/Imager lab at UBC for Dr. Wolfgang Heidrich (to Oct 2011) and Dr. Alla Sheffer. *Developed software to accurately or aesthetically (depending on the project) render novel datasets, including multi-spectra data and normal field representations of objects.*
- Oct. 2010 to March 2011 **VFX Technical Director and VFX Software Developer** at Spin VFX.
Developed lighting and rendering software (e.g. shaders, plugins for Maya and RenderMan, etc.), while offering expert technical direction primarily to lighters to devise methods to achieve their aesthetic goals, but also crowd sim, effects, and compositors.
- Jan. 2010 to present **Freelance VFX Supervisor, Technical Director, Developer, and Artist.**
Offering a full gamut of VFX services from pre-production through to post-production to independent short films.
- Aug. 2008 to Jan. 2010 **VFX Research and Development, VFX Artist** at Pix Ray VFX.
Developed lighting and rendering software (e.g. shaders, plugins for Houdini and RenderMan, etc.), focussing primarily on volume rendering and efficient generation of massive amounts of geometry at render-time.
- July 2008 to Aug. 2008 **Intern; VFX Research and Development, VFX Artist** at Pix Ray VFX.
Developed render efficient crowd simulation software, while matte painting and compositing.
- 2005 to present **Freelance Cinematographer** and **Editor.**
- 2004 to 2008 **Honours BFA in Film Production** at York University.
- 2004 to present **Freelance Photographer.**
- 2002 to present **Freelance Web Developer.**

SCHOLARSHIPS and AWARDS

- Silver “Audience Choice Award, Best Canadian Short Film”** for “Blind Spot” from Toronto After Dark Film Festival, 2011.
- “Best Editing”** award for “Outpost 62” from Cinesiege, 2008.
- Entrance Scholarship** of \$4000 from York University, Sept. 2004.
- Marion Drysdale Award** in “French or English video/audio/animation” category for “Reciprocation” from the Ontario Secondary School Teachers' Federation, 2003.

RECENT FILMOGRAPHY

- VFX Consultant** - "Laughing Out Loud" by Dan Clements. Comedy, RED, 2012.
- VFX Lighting Technical Director** - "The Borgias" (episodes 4-9) produced by Showtime. Drama, 55 min per episode, HD, 2011.
- VFX Software Developer** - "The Borgias" (episodes 1-9) produced by Showtime. Drama, 55 min per episode, HD, 2011.
- VFX Supervisor** and **Producer** - "Blindspot" by Matthew Nayman. Drama, 5 min, HD, 2010. Official selection at 2012 Miami International Film Festival, 37th Boston Sci-Fi Film Festival, 2011 Leeds International Film Festival, 2011 Austin Film Festival, and 2011 Toronto After Dark Film Festival.
- VFX Supervisor** - "Edward" produced by Major St. Productions. Drama, 8 min, HD, 2010.
- VFX Artist** and **VFX Software Developer** - "Asteroid Impact" produced by TV6 LTD Great Britain / BBC. Documentary, HD, 2009.
- VFX Artist** and **VFX Software Developer** - "Mayday" (season 8) produced by Cineflix. Documentary, 43 min per episode, HD, 2009.
- VFX Artist** - "Vote 08" US Presidential Election commercial bumpers, produced by ABC. HD, 2008.
- VFX Artist** and **VFX Software Developer** - "Mayday" (season 7) produced by Cineflix. Documentary, 43 min per episode, HD, 2008.
- VFX Supervisor** - "The Black Shell" by Matthew Nayman. Drama, 18 min, HD, 2008.
- Editor** - "The Black Shell" by Matthew Nayman. Drama, 18 min, HD, 2008.
- VFX Artist** - "The Dead Girl" by Alex Unger. Drama, 11 min, HD, 2008.
- VFX Supervisor** - "Freezer Repairs" by Amanda Fahley. Drama, 14 min, Super 16mm, 2008.
- VFX Supervisor** - "Harvest Dance" by Juan Manuel. Drama, 9 min, 16mm, 2008.
- VFX Supervisor** - "Inconvenience" by Elli Weisbaum. Comedy, 17 min, 35mm, 2008.
- VFX Supervisor** - "Outpost 62" by Luke Van Osch. Drama, 5 min, Super 16mm, 2008.
- Editor** - "Outpost 62" by Luke Van Osch. Drama, 5 min, Super 16mm, 2008.
- VFX Artist** - "A Pretty Funny Story" by Evan Morgan. Comedy, 27 min, HD, 2008.
- VFX Supervisor** - "A Stir in the Forest" by Madeline Sims-Fewer. Drama, 16 min, HD, 2008.

GRAPHICS SOFTWARE PROJECTS

- ID/AO Point Cloud Pipeline**, for Spin VFX. A suite of shaders and tools to, with little effort from the artist, bake a radiosity point cloud, calculate multiple bounces of indirect diffuse and multiple distances of ambient occlusion in a highly parallel manner on a render farm, and finally render the results in a single pass. Months after I left Spin, this toolkit facilitated a single lighter to finish 16 shots for the second season of *The Borgias* in 12 days. 2011.
- Course Materials for CS314**, for UBC. A set of programming assignments for the third year "Computer Graphics: Rendering" course offered in the computer science department at UBC, covering the entire OpenGL rendering pipeline, and a near-RenderMan-compliant raytracer.
- NPR of Normal Fields**, for Dr. Alla Sheffer. A rendering pipeline to generate aesthetically pleasing, non-photorealistic images from a set of bezier boundary curves and a normal field using Gooch-based shading and a novel line hatching approach. 2011.
- Multi-Dimensional-Array Visualizer**, for Dr. Wolfgang Heidrich. A realtime interactive data explorer for multi-spectral (often 16 channels) and multi-dimensional (up to 3 and time) datasets. 2011.

- MayaMan mm_magic Fork**, for Spin VFX. A series of patches to the Shading Language generation subsystem including fixing a number of bugs (e.g. improper normal face-forwarding during bump/bake), adding addition surface export functionality (eg. bump influenced incident light export), and other tweaks necessary for seamless integration into Spin's pipeline. 2010.
- PRMan Bake to AIR Render**, for Spin VFX. A suite of tools to utilize the advanced baking functionality of Pixar PRMan, and to translate resultant bakes (in the form of point clouds) into a form ideal for use in SiTex Graphics AIR. 2010.
- Render-time Instancer**, for Pix Ray VFX. A comprehensive tool for SideFx Houdini that instances points, volumes, blobbies, or geometry archive sequences at render-time in a RenderMan compliant renderer. Instances are positioned and animated according to interpolated key-value data attached to a point cloud. Useful for sprays/fluids, flocks/swarms, asteroids, foliage, etc.. Designed to minimize memory usage allowing for many times more instances than could be held in memory with a more simplistic approach. 2008 to 2010.
- pixraylib**, for Pix Ray VFX. A C/Python library which serves as the basis for most projects at Pix Ray. Various classes allow for seamless communication between Houdini nodes and code run in a RenderMan compliant renderer via either the Procedural "RunProgram" call, or a RIB Filter. Also contains implementations of space-subdivision algorithms (ie. KD trees), linear algebra, and various noise functions. 2008 to 2010.
- Point Based Volumes**, for Pix Ray VFX. A set of RenderMan shadeops implementing a complete and self-contained point cloud query system allowing for access to arbitrary key-value data from the set of points returned from any of several query types (e.g. closest N points, points within X radius, self-described spheres intersecting a given point). 2009.
- Embedding Python in AIR**, personal project. A proof of concept embedding of a Python interpreter into a SiTex Graphics AIR Instancer shader via a C shadeop, giving the running script access to all shadeops available in the shading language context, including methods to make queries of the geometry itself. 2009.
- Crowd Generator**, for Pix Ray VFX. Allows render-time generation of agents in a RenderMan compliant renderer, transitioning through existing animation loops, and driven by arbitrary key/value data attached to a point cloud while using a minimal amount of render-time resources. 2008 to 2009.
- Foliage Generator**, for Pix Ray VFX. Allows render-time generation of large amounts of unique foliage of a variety of types, using minimal render-time resources. Uses L-Systems or assembles instances out of recursively arranged pre-generated geometry. 2009.
- Houdini Fur for AIR**, for Pix Ray VFX. A fur rendering system for a RenderMan compliant renderer using the interface provided by Houdini's existing fur system, including style shaders which mimic those provided by Houdini. 2009.
- AutoSHOP**, for Pix Ray VFX. A RenderMan shading language header file and SideFX Houdini SHOP node designed in concert to allow for auto-generation and interpretation of advanced GUI elements (gradients, menus, etc.) otherwise incomprehensible to the shading language. 2009.
- Dynamic Volume Region**, for Pix Ray VFX. A RenderMan procedural which generates the necessary "Volume" primitives to encase a given point cloud. This tool minimizes the rendering of empty space and allows for significant translations of the point data without displaying typical boundary or detail-size artifacts. 2009.
- Fire and Smoke**, for Pix Ray VFX. A set of RenderMan shaders mimicking pyroclastic smoke and fire, written using my Point Based Volume query engine described above. 2009.

Raytracer, personal project. A basic raytracer featuring primitive geometric shapes (including meshes), several types of lighting (including indirect diffuse and ambient occlusion), and a basic set of surface shaders. 2008.

OTHER SIGNIFICANT SOFTWARE PROJECTS

PyHaml, personal project under BSD license at <http://github.com/mikeboers/PyHaml>. A Python implementation of Haml (<http://haml-lang.com>). Notable due to its moderately sized user base that requires significantly more effort towards providing proper support (which is often missing from personal projects). 2010 to present.

ScoreBee, personal project under BSD license at <http://github.com/mikeboers/ScoreBee>. A GUI application for scoring behaviors in digital video, designed borrowing techniques from film editing software allowing for more intuitive use than available existing products. Originally written for development on:

Stemberger T.L.M., Fitzpatrick M.J., Food fights: evidence of a conditional strategy in adult Drosophila simulans males as a result of larval nutrition. (in preparation)

2010 to present.

PyTomCrypt, personal project under BSD license at <http://github.com/mikeboers/PyTomCrypt>. Python wrapper around LibTomCrypt cryptography library. Written primarily in generated Cython, the wrapped crypto tools are 400-500x faster than simple calls to external program. Designed to have a much simpler API than existing Python crypto packages. Used by an *Activision Blizzard* online service supporting 250 million gamers. 2009 to present.

There are several more open source software projects that I either started or contribute to hosted at <http://github.com/mikeboers>.

OTHER SIGNIFICANT PROJECTS

<http://mikeboers.com>, personal project. A complete blogging engine (including media from Twitter, Flickr, Reddit, StackExchange, Vimeo, etc.), an endpoint for QR-code based business cards, and a distribution center for client's files. 2011 to present.

<http://secrettrial5.com>, for Amar Wala and myself. Featuring donation collection built on top of PayPal, and client editability with varying permissions on different administrators (e.g. the editor may only post to the blog, not deal with donations). 2010 to present.

<http://msgonce.com>, one-day personal project with Shane Martin. A web service to assist in discreet and anonymous transfer of information between parties on the internet. 2009.

<http://pixray.ca>, for Pix Ray VFX Inc. Featuring client editability and a browser-based file management system for clients to transmit arbitrarily large files. 2009.

The Shutterbug, personal project. I attempted to post a new photograph that I captured and processed to my website every day. June 2005 to April 2007.

RELEVANT EXTRA-CURRICULARS

August 2011 - **Attended full "SIGGRAPH 2011" conference** in Vancouver,

July 2010 - **Participated in "Technical Evenings"** hosted by SideFX entitled:

- "FLIP Fluids"
- "Mantra and Houdini 11"

June 2009 to July 2009 - **Participated in “Technical Evenings”** hosted by SideFX entitled:

- “Distributed Fluid Simulations”
- “PyroFX”
- “Crumpling and Tearing”
- “Introduction of Houdini 10”

Oct. 2008 to Dec. 2008 - **Participated in “Technical Evenings”** hosted by SideFX entitled:

- “In-Depth Look At Fur”
- “Advanced Tool Building”
- “On Fire”
- “Rendering With Mantra”
- “Programming Houdini with Python”

SUMMARY of KEY SKILLS and AREAS OF FOCUS

- Experience compositing, motion tracking, chroma-keying, and matte painting.
- Experience with on-set visual effects coordination for several short films.
- Experience as first and second editor on a variety of dramatic, comedic, documentary, corporate, and experimental films.
- Experience with SideFX Houdini, Autodesk Maya, Pixar PRMan, SiteX Graphics AIR, DNS Research 3Delight, Animal Logic MayaMan, Foundry Nuke, eyeon Fusion, Adobe After Effects, Pixel Farm PFTrack, Imagineer Systems Mocha, Adobe Photoshop, Apple Final Cut Pro, Maxon Cinema 4D.
- Knowledge and experience developing software to integrate with or extend RenderMan compliant renderers (e.g. shadeops, RiFilters, procedurals, etc. for all three), SideFX Houdini, Autodesk Maya, and Animal Logic MayaMan.
- Knowledge and experience developing varied shaders for RenderMan compliant renderers, SideFX Houdini (i.e. mantra), OpenGL, and several proprietary renderers.
- Understanding of many of the algorithms and technology behind the entire rendering pipeline, both offline (e.g. REYES/rasterization, raytracing) and realtime (e.g. OpenGL rasterization).
- Understanding of many technical photographic concepts, encompassing optics, image capture and signal processing.
- Knowledge and experience in the theory and practice of software development covering many realms, from dynamically translated and interpreted languages all the way to the bare metal.
- Highly proficient with applied mathematics and physics (often scoring the highest final grade in classes otherwise filled with math or physics majors).
- Knowledge and experience with server side web development (with Python, Ruby, and PHP).
- Knowledge and experience with the inner workings of the CPython implementation, writing extension modules with Cython or directly in C, and embedding CPython into other applications.
- Knowledge and experience with varied cryptographic primitives and open source cryptographically based protocols (e.g., oauth, openid, HTTP authentication, GPG, SSH, etc.).
- Discipline in applying highly technical knowledge in such a way that my work exists solely to tell the story and not to be idolized for its own merits.