

Jake Van Alstyne

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SUMMARY

Software Engineer

Web, iOS, Mac OS X
3D Graphics, Data Visualization
HTML5, CSS3, PHP5, JavaScript
MySQL, Python, WebGL
C, C++, Objective-C
CLI, Emacs, Git, Apache

EDUCATION

Master of Science - Computing - University of Utah

2013

- Graphics and Visualization
- Improvements to rational surface analysis in toroidal magnetic confinement fields

Bachelor of Science - Chemical Engineering - University of Utah

2008

- Dean's List
- High Temperature Fixed Bed Mercury Sequestration on a Non-Carbonaceous Substrate

EMPLOYMENT

Independent & Freelance iOS / Mac OS X / Web developer

5/2008-
Present

- Freelance developer for hire. I've built dozens of custom iOS and Mac OS X applications for clients.
- pms.leadsys.co - A lead generation and tracking web application I built for one of my clients, uses Python, PHP, Zend MVC framework.
- www.UnitsOfCode.com - A web application I designed and built for myself, it is a public webservice for storing and sharing code snippets online, built using JQuery, Python, PHP and CodeIgniter MVC framework. Planned future improvements include providing an API for developers.
- PictureThis! - A free iOS App I created using StoreKit. It connects to a private server using AJAX and JSON to sell and distribute packages of scenic photographs from around the world.
- OnCue - A free and open-source Mac OS X app I created which allows the user to control their iSight camera with timers, as well as by detecting motion in the room. I developed this feature using GLSL shaders in Apple's CoreGraphics library.
- Visit EggDevil.com for links to the App Store
- Full product development from concept to deployment on App Store
- Objective-C, Cocoa, Cocoa-touch, UIKit, CoreData, StoreKit, QTKit, GameKit, CoreVideo, OpenGL, OpenGL-ES, Cocos-2D, etc

Software Engineer, K'nowbe Works, LLC, West Valley, Utah

4/2012-
12/2012

- Main product development, C++, Windows API, MFC, COM, OpenGL, OSG & GLSL
- I developed a set of visually striking 3D interactive industrial design tools as plugins to a proprietary 3D graphics engine in Windows 7 for K'nowbe using C++, Windows COM, OpenGL, OSG, GLSL, and various scripting tools such as Python. The tools I developed include bidirectional A* heuristic path finding, gaussian smoothing, image processing, large point cloud rendering, ray tracing, GPU shaders, and a detailed GUI polish.
- In addition to developing tools that are in and of themselves sellable products, I helped maintain existing code, find and fix bugs, manage the build and revision control, as well as contribute knowledge and experience.
- Agile development team using TFS as our revision control and a custom in house testing suite for unit tests and TDD.

Software Engineer, Flexsim Simulation Products, Orem, Utah

11/2011-
3/2012

- Main product development, C++ and custom engine scripting (FlexScript)
- I was on the main product development team, tasked with maintaining and upgrading the code using C++ as my primary language and using the Windows MFC API. I made a series of sweeping improvements to FlexSim's GUI, as well as changes to the core application functionality. Additionally, I created a suite of performance and unit tests for the FlexSim code base. I maintained the code in their mercurial repository and we worked as an Agile team.

Software Engineer, Software Development Center, University of Utah

6/2010-
9/2010

- Custom web portal development
- Using only JQuery, HTML, and CSS, I developed a dynamic user interface where clients could manage their accounts and design layouts for their advertising.

OpCode LLC - iPhone developer

5/2008-
8/2008

- [CarSplosion](#)
- I developed the visual gimmicks, including firebombs and explosions for this mini-game using Objective-C, Cocoa-touch, Cocos2D and chipmunk-physics.

Research Assistant, University of Stuttgart Institut für Verfahrenstechnik und Dampfkesselwesen (Institute for Process Engineering and Power Plant Technology)

8/2007-
1/2008

- Student Research Exchange
- I worked with graduate students to progress their research with sulfur emissions. I did various lab work and worked with typical industrial lab equipment. At one point I was given a malfunctioning BET scanner, which I repaired within a week and used to analyze soot samples for the researchers.

Undergraduate Research Assistant, University of Utah

10/2006-
12/2008

- High temperature fixed bed mercury sequestration research on a non-carbonaceous substrate.
- I researched mercury sequestration on a novel non-carbonaceous mineral sorbent. My results showed promise for the material, and I was invited to present a poster at the undergraduate student competition in San Francisco at the AIChE convention in 2007.

DEVELOPMENT SKILLS

Programming

- Object Oriented Design / Architecture
- HTML5, CSS3, JavaScript, PHP, Python
- MySQL, SQLite, PostgreSQL
- C, C++, Objective-C
- Java
- C#
- HTML, CSS, JavaScript, JQuery
- OpenGL, GLSL
- Additional skills:
 - Scientific Computing & Visualization
 - Numerical Techniques
 - Cocoa, Cocoa-touch, Windows API, MFC, COM, SQL, PHP, bash, zsh, AppleScript, LATEX, MATLAB, Blender, Git, SVN, Agile, Unit Testing, JUnit

TEACHING

University of Utah, Salt Lake City, Utah USA

- Graduate Instructor 2011
 - CS 1400 - Introduction to Computer Science
- Teaching Assistant
 - CS 3810 - Computer Organization
 - CS 2420 - Computer Science II 2010
 - CS 2420 - Computer Science II EAE (Engineering Arts and Entertainment Track)
 - CS 1410 - Computer Science I EAE (Engineering Arts and Entertainment Track)

RESEARCH

- Exploration of the Material Point Method on Adaptively Refined Meshes with Hanging Nodes 2011
- Rational Surface Extraction in Toroidal Magnetic Field Simulations 2008
- High Temperature Fixed Bed Mercury Sequestration on a Non-Carbonaceous Substrate

HONORS

- Red Hanger Scholarship 2007
- John Zink Award 2006
- Chemical Engineering Departmental Full Tuition Scholarship 2001
- University Honors at Entrance Scholarship