HP Technical Career Path (TCP)

Master Level Individual Nomination Form

Kamal Gill

Overview

Kamal has almost two decades of experience as a Web-based software engineer and currently the UI Architect and Tech Lead of the Eucalyptus front-end engineering team. He has worked in a diverse set of industries, including healthcare, education, government, advertising and news media. He has been a strong advocate for code reviews and writing clean, testable code. Kamal is particularly adept at building scalable Web applications with Python frameworks (Pyramid, Flask, Django), and JavaScript libraries and frameworks (AngularJS, NodeJS). He also has solid experience architecting and implementing JSON-based REST APIs.

Within Eucalyptus, Kamal was brought on board to tackle many of the issues with the 3.x series of the Eucalyptus Management Console, which had numerous performance-related issues and suffered constant regressions due to a brittle architecture and a convoluted code base. Within his first month of joining Eucalyptus in late August 2013, he proposed adopting a completely new architecture[1] for the console and he successfully drove the implementation of the redesigned and revamped product while mentoring a relatively inexperienced team. Kamal not only implemented the new design and re-architecture, he and his team added a significant number of new features within a single release cycle.

[1] https://drive.google.com/file/d/0B4NVhE915mi0OER5NnlMT1JlYU0/view?usp=sharing

Significant Technical Achievements

October 2013 - Present

Kamal joined Eucalyptus in August 2013 and immediately made an impact with a proposed redesign and re-architecture of the Eucalyptus Management Console. Not only did he convince his fellow front-end developers and his management team that a complete rewrite of the Management Console would be a significant win for the Eucalyptus product and the team, he contributed a significant amount of high-quality code[2] and performed code reviews of hundreds of pull requests[3] to ensure that the 4.0 version of the Console was the most stable, scalable, usable, mobile-friendly, and maintainable release of the product to date.

During the redesign and re-architecture of the Console, Kamal moved the entire console team to a new development model utilizing GitHub pull requests to facilitate easier code reviews. Pull requests were hooked up to CI tests via Travis and Jenkins, freeing up the QA team to write more automated tests for new features rather than vigorously checking for regressions via manual testing. The code review process not only ensured standards and best practices were followed, it also allowed the development and QA teams to learn from each other, provide tips and tricks, and promote a shared ownership of code.

The new development model implemented by Kamal also facilitated external contributions, allowing the UI team to accept bug fixes and language translations from the community in a more efficient manner. The new architecture has significantly increased the velocity of the team, and adhering to open standards and adopting best-of-breed frameworks have allowed junior developers to easily ramp up to develop features with increased velocity and fewer regressions. The improved speed of development and the well-established processes advocated by Kamal allowed the Console team to pull in additional features, such as Identity and Access Management, from the wider roadmap that weren't originally slated for the 4.0 release, to the delight of the Eucalyptus management team, Eucalyptus customers, and the wider community.

Specific examples of how the Kamal's new architecture for the 4.0 release of the console improved on prior releases:

- The 3.4 version of the console only worked well on one or two desktop browsers, while the 4.x series supports a wide variety of desktop and mobile browsers across a plethora of devices, thanks to Kamal's selection of and experience with a well-designed and well-documented responsive web design framework[4] for the new architecture.
- The 3.4 console's CSS styles were poorly managed and often involved hair-pulling wild goose chases to track down and implement style fixes. Kamal introduced the use of Sass[5], which extends CSS to include variables, functions, mix-ins, and other features that allows designers

[2] https://github.com/eucalyptus/eucaconsole/graphs/contributors

[3] https://github.com/eucalyptus/eucaconsole/pulls

[4] http://foundation.zurb.com/

[5] http://sass--lang.com/

and developers to much more easily manage the look and feel of the console, with the potential to allow customers and/or third parties to build “themes” for the application.

- The 3.4 console development process did not utilize code reviews. Kamal immediately introduced a formal process of code reviews for the 3.4 release of the console, and the 4.0 release further refined the process. It is worth noting that over 700 pull requests were submitted for the 4.0 version of the console.
- The 3.4 console utilized a home--grown system to manage localizations and translations. Kamal switched the internationalization framework to one based on the well--known gettext standard, fostering community contributions of software translations for the console.
- The form validation approach for the 3.4 console was error--prone and insecure, opening the console to various attack vectors since the home--grown client--side validation rules could be easily bypassed. For the 4.0 console Kamal implemented a consistent form validation framework that enforced and reused validation schemas server--side and client--side, vastly improving the security of the console, offering a consistent approach that is maintainable and can be unit tested, and keeping the code base DRY.[6]
- The 3.4 console included a significant amount of duplicate code and often mixed logic and presentation (e.g. HTML content and CSS styles generated in JavaScript), making it difficult to determine where to make changes when fixing issues or updating content. The 4.x console has a much cleaner separation of concerns, which has even empowered the console’s UX Architect to contribute an unprecedented amount of code.
- The Git branching strategy for the 3.4 console was fairly convoluted and inconsistent. For the 4.0 console Kamal advocated using the “git flow” branching model[7], which has seen widespread adoption in the industry. Using a consistent workflow for Git has improved the productivity of the console team and also removed a source of confusion for community members looking to contribute bug fixes and translations for the console.
- The 3.4 console’s inline documentation was poorly managed and led to numerous performance issues (e.g. the login page often took more than ten seconds to load). The 4.x console leverages a much cleaner approach (via page--specific HTML includes), significantly improving page load time and empowering the documentation team to contribute an unprecedented amount of inline help content.

Earlier Work

March 2012 -- July 2013

As a software engineer at ClearCare, Kamal’s notable contributions include the following…

- He introduced and evangelized code reviews as a method of improving code quality and shared code ownership among the distributed development team.
- He introduced AngularJS as the preferred JavaScript framework, replacing a brittle, home--grown jQuery--based framework. Adopting a well--established, well--documented

[6] http://en.wikipedia.org/wiki/Don't_repeat_yourself

[7] http://nvie.com/posts/a--successful--git--branching--model/

JavaScript framework allowed fellow (and future) developers on the team to ramp up quickly to build new features for the ClearCare product.
- He advocated the use of Karma and Jasmine to increase the coverage of JS tests, bringing them up to parity with the number of Python-based unit tests for the Django-based framework. Prior to his joining ClearCare, there was no unit test coverage for the large amount of JavaScript code powering the online product. Kamal’s contributions, specifically his Jasmine-based unit tests (running via the Karma test runner) significantly improved the JavaScript unit test coverage, increasing the quality of the product.

March 2011 -- February 2012

As a software engineer at Meebo (acquired by Google), Kamal’s notable accomplishments include the following…

- He revamped the Meebo buddy icon (avatar) service during his first month at Meebo, migrating the app from mod_python to a full WSGI-compliant, gunicorn/gevent-based service, improving the performance and reducing resource utilization by an order of magnitude. The revamped application led to significant cost savings for the organization since serving avatars utilized a large portion of Meebo’s infrastructure budget.
- He wrote Meebo's first NodeJS-based web application (meebo-iodocs), providing documentation for the Meebo Check-ins REST API. The improved documentation allowed developers to build features more quickly for the Meebo Check-ins product.
- He architected and developed the Meebo Web Application Boilerplate project (meebo-webapp-kickstart), a Flask-based project that was slated to be the common underlying framework for all non-trivial Python-based Web applications at Meebo.

August 2009 -- March 2011

As a developer at the Interactive Media unit of The Sacramento Bee, Kamal’s notable contributions include the following…

- He built interactive databases and features such as the California State Worker Salary Search, the California Legislator Voting Record, the Calif. State Parks feature, and the Sacramento Connect Network. The databases continue to be utilized by hundreds of thousands of Bee subscribers to this day.
- He introduced and evangelized using GitHub for source code control, and he implemented a code review process that has been adopted across The Sacramento Bee and its sister publications.

July 2006 -- August 2009

As a consultant working on a large software project for CalPERS, the largest pension fund in the U.S., Kamal’s notable contributions include the following…

- He designed and implemented a document management system (based on Plone CMS) for a three-year $200 million software project.
- He led the UX design and technical implementation of the project dashboard to allow numerous contracting agencies to collaborate with CalPERS by sharing documents on an online portal

that also displayed an at-a-glance health of the project through it's various phases. His focus on building a solution that was easy to use allowed non-technical staff to catalog and search documents in an efficient manner.

June 2003 -- March 2009

As a core committer of Plone CMS (a Python-based content management system), Kamal participated in several hackathons (sprints) to improve the core product. In 2006 he created the Plone Meetup Group in Davis CA, one of the largest Plone meetup groups in North America. His community efforts were recognized in mid-2007 as he was onboarded as a member of the Plone Foundation.

May 2001

During his time as a Web Developer at CNET.com, Kamal was a strong advocate of open source technologies and platforms. He contributed numerous reviews[8] of Linux distributions far before Linux went mainstream for CNET's Linux Center almost fourteen years ago.

Demonstrated Technical Leadership

Creativity and Innovation

Kamal is a frequent speaker and active participant at his Python meetup groups[9]. He actively participated in knowledge sharing forums at The Sacramento Bee and other McClatchy newspaper properties, and his work at The Bee was instrumental in the newspaper's winning a top honor in the fourth annual national Inland Press Digital Journalism Awards in March 2011.

Kamal worked closely with the UX architect for the 4.0 release of the Eucalyptus Management Console, hosting a design summit in October 2013 where he iterated on numerous wireframes and prototypes for the redesigned, mobile-friendly console. Not only did he help design a beautiful user experience, his architecture and implementation choices have empowered his fellow developers, the team's UX Architect, and the console documentation team to contribute an unprecedented amount of code and content for the new console.

Kamal understands that improving the ease of installation is a critical way to increase adoption of a product, especially an open-source one. He created the "Unified Installer" for Plone CMS over seven years ago, and it remains the *de facto* way to install Plone on non-Windows systems today. Prior to the advent of the Unified Installer, Plone was notoriously difficult to install. Kamal's installer significantly increased the adoption of Plone CMS worldwide, to the delight of the Plone Foundation and the larger community.

[8] http://www.cnet.com/products/red--hat--linux--7--1--std/
[9] https://github.com/kamalgill/presentations

Technical Leadership

Kamal is a strong advocate of code reviews, introducing a formal review process during his tenure at The Sacramento Bee, InMobi, ClearCare, and Eucalyptus Systems. He is a frequent attendee of front-end engineering conferences, and he methodically garners, researches, and champions best practices across every front-end team he has worked with.

As a member of the Eucalyptus Architecture team, Kamal has provided leadership and mentorship for his front-end engineering team, implementing a formal code review process (via GitHub pull requests) and advocating writing clean Python code that is PEP8 compliant and adheres to software engineering best practices. The code reviews have been instrumental in improving the quality of the Eucalypts Console product, fostering shared ownership of the code base while keeping regressions to a minimum. He helped his fellow developers get up to speed on the technologies selected for the 4.0 version of the Eucalyptus Console, including sharing knowledge and best practices for Pyramid[10], AngularJS, Foundation[11], and Sass/CSS.

Security is often relegated as a second-class citizen during the software development lifecycle. Kamal strongly believes that it is impossible to build a quality software product without escalating security concerns as a top priority. He has deep knowledge of the top ten web application security concerns[12], and he worked closely with the Eucalyptus Security Architect to proactively mitigate attack vectors during the development of the 4.0 Eucalyptus Console.

Standards

Kamal is a firm believer in the benefits of open standards, and he advocates solutions that adhere to W3C standards where applicable. For example, when selecting a templating system for the revamped 4.0 release of the Eucalyptus Management Console, Kamal opted for solutions (Chameleon[13] and AngularJS templates[14]) that are consistent with HTML syntax rather than selecting a system that introduces non-standard constructs (e.g. Jinja2[15], Handlebars.js[16]). When selecting an internationalization framework for the new Console, Kamal opted for a gettext-based system that allowed community members to contribute translations using tools[17] they were already familiar with

Technical Community

Kamal is a strong believer in the merits of open source software and understands the challenges in community-based development of a software product. He was a member of the Plone Foundation and a core committer of Plone for many years, participating in numerous sprints and hack-a-thons to improve the product via code and documentation contributions.

[10] http://www.pylonsproject.org/
[11] http://foundation.zurb.com/
[12] https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project
[13] https://chameleon.readthedocs.org
[14] https://docs.angularjs.org/guide/templates
[15] http://jinja.pocoo.org
[16] http://handlebarsjs.com
[17] http://poedit.net/

Knowledge Sharing

Kamal actively mentored his development team at Eucalyptus during the development of the revamped 4.0 release of the Management Console, hosting weekly developer meetings and impromptu code review sessions to demonstrate new techniques and best practices. The mentoring has led to a stronger development team, significantly improving the quality of the product.

Kamal isn't shy about sharing tips, tricks, and best practices in Web development and Cloud Computing technologies. He has recently delivered the following presentations, each roughly an hour in duration.

The Pyramid Web Framework and the Eucalyptus Management Console

Delivered to the Inland Empire Python Meetup Group on June 17, 2014
http://www.meetup.com/iepython/events/184296602/
https://github.com/kamalgill/presentations/blob/master/IEPythonMeetup--PyramidWebFramework.pdf

Boto, the Python SDK for AWS

Delivered to the Inland Empire Python Meetup Group on July 15, 2014
http://www.meetup.com/iepython/events/190047642/
https://github.com/kamalgill/presentations/blob/master/Boto%20--%20The%20Python%20SDK%20for%20AWS.pdf

Google App Engine

Presentation to be offered to the Inland Empire Python Meetup Group on November 18, 2014
http://www.meetup.com/iepython/events/202453492/

Demonstrated Breadth and Depth of Knowledge

During the revamp of the Eucalyptus Management Console for the 4.0 release, Kamal not only spearheaded a re--architecture of the code base and a redesign of the user interface, he also mentored his front--end engineering team to develop new features at a rapid pace, cutting the number of regressions to a fraction of those introduced in prior releases. He also worked closely with the Quality Engineering team at Eucalyptus to advocate the use of CI tools (TravisCI and Jenkins), with tests automatically kicking in for each new pull request, keeping regressions to a minimum.

Kamal has significant experience with a wide variety of cloud computing technologies, including hands--on experience with AWS and Google App Engine. His "Flask App Engine Template" project[18] has over 700 stars on GitHub and is listed in the official Flask documentation[19] as the recommended approach to deploy a Flask app on App Engine.

Kamal also has significant experience building apps that support multiple devices. He championed Responsive Web Design principles at Meebo, ClearCare, and Eucalyptus Systems, and the 4.0

[18] https://github.com/kamalgill/flask--appengine--template
[19] http://flask.pocoo.org/docs/0.10/quickstart/

version of the Eucalyptus Management Console offers a responsive, mobile-friendly interface, allowing the 4.0 release of the console to be the first that supports non-desktop browsers and platforms.

Kamal has the rare combination of a commanding knowledge of Python Web Frameworks, significant experience with JavaScript libraries and Frameworks, hands-on experience with cloud computing technologies, and a strong sense of user experience design that allows him to stand out as a best-of-breed Web Product Engineer.

Education Summary

Doctor of Dentistry Program, UCSF (1997 - 2000)
B.S. Biology, UC Irvine (1992 - 1997)

Recommendations

Jenny Loza

Principal User Experience Architect and UX/UI Manager at Eucalyptus Systems
Directly managed Kamal at Eucalyptus

“Kamal is one of the most capable front-end developers I know. He has proven to be thorough and thoughtful in his work as an individual contributor, and open to discussion while remaining strong as a mentor to other developers and technical team leader. His broad understanding of tools, technologies and processes, and collegial manner have enabled him to successfully lead the team to create a well-written, testable, comprehensible and extensible codebase. I trust Kamal and value his opinions, and greatly enjoy having Kamal as part of my team.**”**

Peter Sheats

VP of Engineering, ClearCare
Directly managed Kamal at ClearCare

“Kamal worked for ClearCare during an early stage of our company and added tremendous value during that time. As one of his first projects he tackled a very challenging project (invoices and payments) and delivered a very well designed module on a tight schedule and from very sparse specs. Many of his contributions to that module are still in production today being used daily by thousands of users.

Kamal is very meticulous about his code quality, has wonderful communication skills, and has a passion about his craft that few can match. He introduced several great practices and technologies into our project such as using pull requests for code reviews, AngularJS, and Karma for frontend testing. Kamal is constantly learning and staying abreast of the latest technologies. You can tell he knows how to distinguish a trend from a fad.

Based on my experiences with Kamal on my team, I know Kamal will be successful in any role and a great asset to any team.**”**

Blaine Wasylkiw

Manager, Interactive Media, The Sacramento Bee
Directly managed Kamal at The Sacramento Bee

“During his tenure as a Senior Web Developer on our Interactive team, Kamal exemplified the key characteristics a manager hopes for in the role: well-versed in a variety of programming languages and platforms; creative, user-focused mindset in his approach to development; forward-thinking and on the cusp of new & emerging technologies;; collaborative team member who continually strives to enhance and support the efforts of those around him. On each and every project he worked on, his approach and the end results were always top-notch, resulting in success in all measurements. It was a pleasure to have his talents as part of our team, and the organization as a whole is better off thanks to his time at The Bee. I recommend him wholeheartedly.**”**