Accountability

Executive Summary

Community Partner
Professor Raul Figueroa
Student Development Team
Alice Borie
Cindy Lai
Sangha Lee
Duncan McIsaac

Background

Raul Figueroa is a recent graduate of the Carnegie Mellon University Engineering & Public Policy PhD program. He resides in Nairobi, Kenya and is heavily involved in the architecture and construction industry there. Dr. Figueroa is passionate about safe construction practices and spent his time at CMU researching ways to effectively enforce safe construction practices in Kenya. Dr. Figueroa outlined his vision for this project in his dissertation. Eric Muga, a professor teaching Information Systems and Finance from Strathmore University in Kenya, that is taking on the development of the application at the end of the semester.

Project Description

Project Opportunity

In last 7 years, 19 buildings in Kenya have collapsed due to poor construction, killing over eighty people and injuring 290 others. Poor construction in Kenya doesn't come from a lack of resources but from poor distribution of power and responsibilities on a construction project. When building project owners hire contractors, they offer most of the payment upfront, which enables and incentivizes contractors to reduce the volume of concrete and steel used in order to cut costs and increase profit. To address this problem, our team built an application that provides a persistent source of motivation for following safe construction standards.

Project Vision

The team built a mobile friendly web application that construction industry workers can use as a means for quality control. This application forces engineers and quality assurance specialists to complete structural tests on individual building components. The application makes this information available to all users associated to a project and helps the project owner from being blindsided about potential building collapse risks.

The application the team built is comprised of a strong visual front end so that engineers would have no difficulties using the system. The system is designed in such a way to prevent cheating when importing project information and completing tests. With this application, construction professionals are able to see which engineers and architects have a history of safely constructed buildings.

Project Outcomes

Product: A custom Ruby on Rails application, named "Accountability", that runs a MySQL database. This application works well on mobile and desktop devices.

Process: Our team held weekly Skype meetings with Dr. Figueroa to gather requirements and clarify concepts. The team followed an agile development methodology, iteratively gathering requirements, designing, and developing the application.

People: Our team worked with Dr. Figueroa to create a list of skills and qualifications the future developer would need to have in order to successfully maintain the application. Based off these qualifications, Dr. Figueroa hired Mr. Muga to continue the development of this application. The team shared clear documentation that contains information about the development of the application and next steps Mr. Muga should take.

Project Deliverables

1. A private Github repository of our Ruby on Rails application.
2. A documentation folder containing supporting development materials.
3. DigitalOcean account with configured development server.

Recommendations

Recommendations for client

- Implement additional requirements (see Final Report for details)
- Maintain a consistent amount of development
- Test the application for production

Recommendations for future student teams

- Compare long term schedules with your client
- Be ready for changes in requirements from the client.

Student Development Team

Alice Borie served as project manager. She is a rising senior with a major in Information Systems. She is graduating in May 2016 and her career interests include project management and front-end development.

Cindy Lai worked as a backend developer on the project. She is a rising senior with a major in Information Systems graduating in December 2015. She will be interning at Deutsche Bank.

Sangha Lee worked on backend development and quality assurance. She is a rising senior with a major in Information Systems and minor in Statistics. Her career interests include security and big data.

Duncan McIsaac worked as a frontend developer. She is a rising senior in Information Systems with a minor in Human-Computer Interaction. He is graduating in May 2016 and his career interests include full stack development, interaction design, data science and web application security.