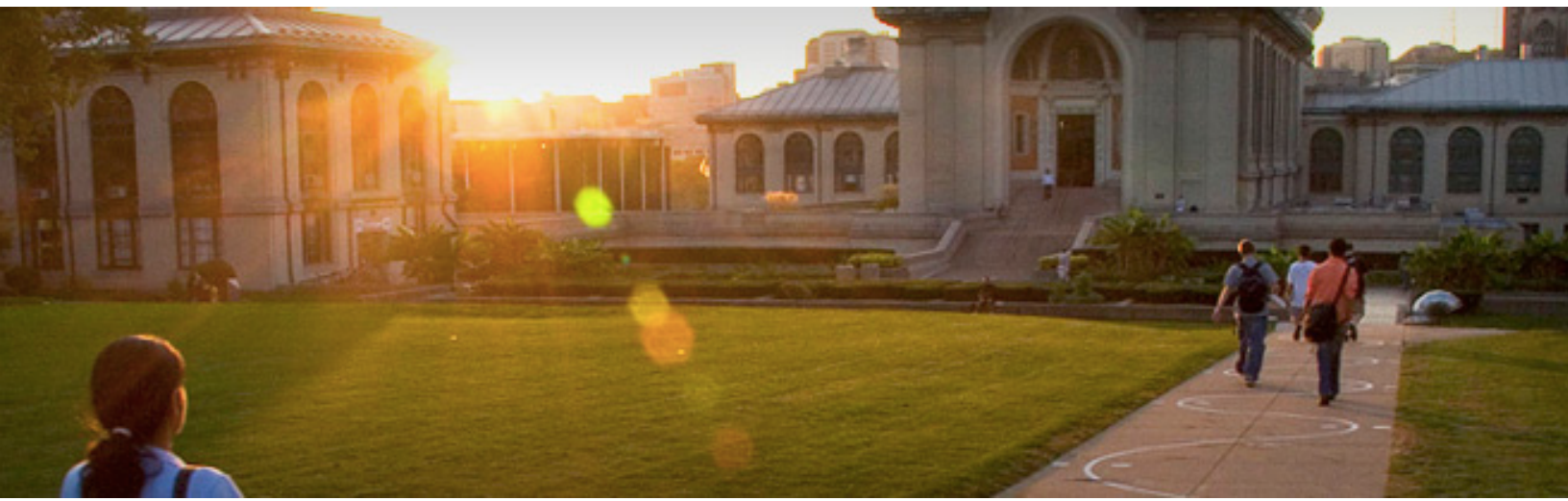


Information Systems Program



EXECUTIVE SUMMARIES **2014**

67-373 SOFTWARE DEVELOPMENT PROJECT

Carnegie Mellon University
Dietrich College of Humanities
and Social Sciences

Executive Summaries

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HCI: Coursemark

Executive Summary

Community Partner

Jim Morris

Student Development Team

Hayden Demerson

Kevin Schaefer

Alex Stern

Background

The HCII at Carnegie Mellon University is a laboratory that investigates the relationship between computer technology, human activity, and society. The HCII has approximately 40 PhD students, 100+ masters students, and 70+ undergraduate students. User-Centered Research and Evaluation (UCRE) is the HCII's largest class of 200+ students. In this class, every student in the HCI undergraduate and HCI masters program learn fundamental research methods in HCI. Recently, the HCI Institute has been investigating ways to support an increasing enrollment size, due to rising demand. The primary obstacle of increasing the enrollment size, though, has been a lack of faculty resources when it comes to grading.

Project Description

Project Opportunity

The primary problem facing the instructors of User-Centered Research and Evaluation is providing adequate evaluation and feedback with a limited number of instructors and teaching assistants. Peer evaluation has been explored as a possible solution to this problem, but the utilized peer evaluation systems frustrated both course staff and students. The current peer evaluation system, SWoRD, is provided by Panther Learning out of the University of Pittsburgh. While support is provided by the one-man development team of the application, the client has expressed that the application is no longer aligned with their goals for peer evaluation for the course. Notably SWoRD has no way of creating or managing group assignments or evaluations resulting in large amounts of overhead and overrides trying to manage the system and its grade book. Furthermore, SWoRD's user interface has led a high number of complaints by both students and faculty. Solving the problem of peer evaluation for the client will allow the client more time and improve the quality of the mechanisms for feedback and evaluation for students in the course.

Project Vision

Our team planned to build a new peer evaluation system for the HCII that would ideally reduce the overhead from evaluation and feedback as part of peer evaluation and empower what human capital is available to the course to better manage it. The primary stakeholders in the development of such an application are the instructors, students, and teaching assistants of User-Centered Research and

Evaluation. Few possible alternatives could even be found that might address the client's problem, and existing solutions are unlikely to meet all the requirements the client has as adequately as a custom solution could.

Project Outcomes

We have developed the minimum viable product of the proposed system. What we have implemented allows instructors to create courses and distribute a code that students can use to register for the course. The instructors can then create assignments and rubrics for how the students will grade their peer's homework. When the assignment is due the submitted assignments are distributed to the students to be peer graded.

Project Deliverables

We are delivering to the client a working peer grading system that is deployed on Heroku at Coursemark.org. The client has full access to the GitHub repository where the code is stored and has instructions on how to restart as well as reinstall the system.

Recommendations

Our team recommends our community partner transition to Coursemark before the semester begins, reviews best practices for writing grading rubrics, provides students with interim feedback before peer review, and is transparent with students about how grades are calculated by Coursemark. Further, we advise future development teams focus on further improving the quality and security of Coursemark rather than adding lots of features. We also recommend that future students continue to design ways to improve student trust in Coursemark by making the process even more transparent.

Student Development Team

Hayden Demerson is a double major in Information Systems and Human-Computer Interaction focusing on web application development and interaction design. During the project Hayden worked as the primary backend developer. After interning at Mozilla he plans to work designing and developing web applications

Kevin Schaefer is a senior majoring in Information Systems and Human-Computer Interaction. During the project he focused on both frontend and backend development. Previously, he interned as a designer at Apple, Inc. After graduation, he will be joining Facebook as a full-time product designer.

Alex Stern is a junior majoring in Information Systems and Human-Computer Interaction. Last summer he interned at Punchcut, a digital design consultancy, as an interaction designer where he will be working again in the summer 2014. On the project he focused mostly on frontend development.

University of Pittsburgh Human Genetics

Executive Summary

Community Partner

Dr. Dietrich A Stephan, PhD

Student Development Team

Allison Min

Jack Montgomery

Linda Zhang

Background

Our client, Dr. Dietrich A. Stephan, is the chairman of the Department of Human Genetics in the University of Pittsburgh's Graduate School of Public Health. The department of 17 faculty focuses on genetic research, education, and services. This organization offers Masters and PhD level courses in genetic counseling and accepts approximately 30 candidates every year. Ultimately, the Department of Human genetics seeks to improve the medical field with their genetics research to solve the top 20 terminal illnesses of our time. Their threefold mission simply stated is: *discovery*, *application*, and *education*.

However, in order to solve the top 20 terminal illnesses, the department requires a significant amount of funding and support from corporate partners, donors and government grants. In addition, the department needs to attract the most motivated, driven, and passionate students as these prospective students are the department's future. Despite having a world-class network of faculty and alumni contributing to the human genetics field, the department does not have a system to collect, measure and display their success. This team's technology solution aids in starting the process of establishing their identity as an effective genetics department, by providing them with some of the information required for fundraising and visualizing their impact in the field.

Project Description

Project Opportunity

Every drop creates a ripple effect that influences another. The department did not have enough information about their alumni and the tools they were using did not yield useful results. As a first step, the student development team designed and implemented a custom survey application to gather information on the accomplishments of their alumni for them.

Project Vision

In order to show that they are an influential leader in genetics, the department needs to pinpoint their influential alumni that have impacted the field. By collecting their responses with our solution, Dr. Dietrich Stephan and his team can then create compelling stories to establish their department's track record of genetic breakthroughs to prospective students and donors. In essence, Dr. Stephan's larger goal is to show the world that their department is a competitive powerhouse that impacts the improvement of human health.

Project Outcomes

Implemented a survey system that can create new surveys, add questions a survey, publish/close surveys, and view responses. Pre-population of a participant's publications reduces the time a participant spends on completing the survey. Worked with client and created a sample alumni survey based on previous official department surveys using the new system. Met with other department administrators in the School of Public Health to demo the value of this system for their department to use.

Project Deliverables

We helped our client set up a GitHub account and forked our project over in addition to providing a zip file of the code base for their records. The application will be installed and hosted on the University of Pittsburgh's servers. Both a printed and an electronic copy of the documentation have been provided to client and his team for future expansion.

Recommendations

For future teams, the three areas of this system that requires further expansion are: survey distribution, participant data pre-population, and visualizations. For survey distribution, having the system track which participants have completed the survey, average time of completion, device used, etc. would provide them with feedback for their survey design. Continuing with pre-populating the survey with known data about the participant's patents would be another necessary step in reducing the hassle of completing a survey. Lastly, adding visualizations of responses would allow the client to demo the results of the survey during meetings with donors, prospective students, faculty, etc.

Student Development Team

Allison Min served as designer and developer for the team. She is a senior Information Systems student with a minor in Architecture. In August, she will begin working full-time as a User Experience Designer at BNY Mellon in New York City.

Jack Montgomery developed the data management system for the application. He is a junior Information Systems, Computer Science, and Human Computer Interaction student. Over the summer he will be working as a developer at Google in Mountain View.

Linda Zhang led the team as project manager. She is a junior Information Systems student with a minor in Global Systems and Management. This summer she will be working as a Business Analyst intern at JPMorgan Chase in New York City.

Meals on Wheels - Trucio

Executive Summary

Community Partner

Josiah Gilliam

Student Development Team

Katie Cameron

Alex Chisolm

Karon Hawkins

Background

Meals on Wheels in Hazelwood operates under the Lutheran Service Society. The Lutheran Service Society (LSS) offers many other programs, including Silver Sneakers, Affordable Housing, and Crossroads Shelter. Meals on Wheels relies on donations and volunteers to function for the day-to-day activities. Customers who receive meals three times daily pay a \$25/week fee. They deliver to about 47 customers per day, Monday-Friday. Saturday and Sunday meals can be a part of the plan and are delivered on Fridays as frozen meals. The technology used is fairly basic, as volunteers are generally older themselves. Mr. Gilliam represents one of a few young employees who are looking to modernize the technologies.

Currently, there is very little integration of technology in the day-to-day Meals on Wheels, and even less in long-term strategy. From this realization, Mr. Gilliam and the Meals on Wheels team decided to help Meals on Wheels through their solution for all Pittsburgh non-profits. The future vision of the service is to improve outreach to people who qualify for the service but are not utilizing it.

Project Description

Project Opportunity

When Mr. Gilliam originally approached the team for this course, we were planning to help Meals on Wheels track their daily delivery success. We continued visiting the office, looking at long-term goals for Meals on Wheels, and this research led us to the social outreach aspect of a solution. Meals on Wheels needed a platform on which to expand their updates to potential customers, donors and volunteers, which was lacking from their partnership with the Lutheran Service Society at the beginning of the semester. From there, we determined that our impact could be much greater than linking their current page to social media, or creating a Twitter account for Meals on Wheels. This led to an even bigger, more far-reaching project - Trucio.

Project Vision

Trucio is a web application consisting of non-profit narratives, compelling media, calls to action, contact information and social media integration for non-profit organizations in the Pittsburgh area. The intended beneficiaries of our product are non-profit executives, who see an increase in outreach, donations, and committed volunteers through signing up for our service. Volunteers also benefit, with a streamlined platform on which to gain information about non-profits in the Pittsburgh area,

and sign up to help, as they are willing and able. This product did not exist in the marketplace, and is truly something that the non-profit community can use. Additionally, this project is to help non-profit organizations collaborate with one another to maximize each other's reach.

Project Outcomes

This project has many intangible outcomes, as Trucio is filling a new product space in the non-profit industry. The outcome for people is that non-profit organization administrators can now provide and be provided with information about organizations in the Pittsburgh area. Volunteers are also provided the opportunity to help non-profit organizations.

For processes, this reduces the necessity to visit individual organization websites to find out information about every single non-profit organization. This will help non-profits make sure that they're optimizing their outreach and allow volunteers to be aware of the myriad ways they can be of assistance to their community. Additionally, Trucio informs donors about where their money is going, and can increase transparency for donors.

Project Deliverables

The final project is a Ruby on Rails web application, hosted at trucio.com. This site provides profiles for each participating organization, tags with which to search / filter organizations, login functionality for organization administrators and a map that shows the impact of each non-profit.

Recommendations

Our team recommends that Trucio get feedback from non-profit organizations to gather input that can help Trucio gain more users in the near future. Mr. Gilliam can apply this feedback to better understand how to maintain the site for the future to attract even more organizations, donors, and volunteers.

Student Development Team

Katie Cameron served as Project Manager for Trucio. She is a junior in the Information Systems Department, with a double major in Decision Science. She will be working for Deloitte this summer, and hopes to have a career at a consulting firm.

Alex Chisolm was the Technical Lead for Trucio. He is a junior in the Information Systems Department and is minoring in Human-Computer Interaction. After working with Apple this summer, he hopes to work in UX research and web development.

Karon Hawkins led the team as Quality Assurance Lead. He is a junior in the Information Systems department. He seeks to work with a non-profit in New York City this summer and hopes to go into technical consulting.

“ZooMobile”

Executive Summary

Community Partners

Jeff Harper

Michael Peuler

Student Development Team

Robert Carlson

Henry Neale

Background

Our community partner is the “ZooMobile” team, consisting of Jeff Harper and Michael Peuler. “ZooMobile” is a codename for the newly restarted project formerly known as “Queezel.” The original project was an effort by our client to create a smartphone application that takes the experience of visiting a zoo or a similar site and makes it more immersive, interactive, and engaging by framing the visit as an adventure/treasure hunt. The original application developers attempted to take advantage of our client, and the conflict eventually led to a lawsuit. Unfortunately, by the conclusion of the lawsuit, our community partner did not have the resources to continue on with their project. In order to bring the project back to life, they require a prototype that they can show to interested third parties for little to no money. In order to bring the project back to life, they require a minimum cost prototype that they can show to interested third parties and prospective investors. The original name “Queezel” is now legally unusable and without an official replacement, so we have chosen “ZooMobile” as a temporary placeholder. There was no initial project code, but there was extensive documentation regarding the former project’s envisioned designs, layouts, and aesthetics.

Project Description

Project Opportunity

Our client’s main problem was that the lawsuit completely drained its money supply, and it had no viable way to get the “ZooMobile” project back on its feet. We believe that the original developers’ actions constituted extortion, and we consider that absolutely unacceptable from a moral standpoint. Given that Carnegie Mellon University is one of the world’s premier technical institutions, we feel driven to lead by example and make positive contributions to the greater community of technology and software development. We saw the talent and potential in our client and their idea, and were motivated to help them and get their project back on its feet. Our goal was to create a viable prototype application that could garner attraction and interest from relevant third parties and help set our community partner back on the right track.

Project Vision

Our goal was to develop a working prototype of the “ZooMobile” application that our client would be able to showcase to potential investors in order to raise funds for restarting and continuing work on the project. Our stakeholders were our client, our client’s clients (Pittsburgh Zoo and others), and

our client's clients' customers (zoo visitors, mostly children). We chose to develop the prototype as an Android application, mainly because of Android's Google Play distribution system, larger user base, and faster growth rate relative to Apple's iOS at the time.

Project Outcomes

- Prototype application completed
- Modular code design in order to ensure future extensibility
- Total of 12 user feedback surveys received (see appendix C in Final Report)
- Developer continuation guide written for future work and maintenance
- Community partner is now more prepared to start raising funds and continue working on the project

Project Deliverables

Included in the project deliverables is our "ZooMobile" Android application in its entirety.

Recommendations

On the business side, we recommend that our client proceed with their original plan to get third parties on board with the prototype as quickly as possible. Another delay of one year or greater may result in third parties losing interest or finding similar alternatives to invest in. It would be preferable to hire professional developers for the next stages of development rather than student developers in order to guarantee a consistent maximum velocity; time is of the essence.

We recommend that all developers continuing work on the "ZooMobile" project first read our included Developer Continuation Guide (see appendix B). We put in our best effort to clarify and document code, and developed the application with extensibility and sustainability in mind. We recommend that future developers do the same, and keep the application simple, clean, and fun.

Student Development Team

Robert Carlson served as project co-manager, lead developer, and client advocate. He is a third-year student majoring in Information Systems with a prospective additional major or minor in Computer Science. He is looking toward a career in software development or cyber security.

Henry Neale served as project co-manager, lead client advocate, and developer. He is a third-year student majoring in Information Systems with an additional major in Business Administration. He is looking toward a career in finance.

Mercy Home for Boys and Girls

Executive Summary

Community Partners

J.B. Mantz

Alison Gates

Mark Schmeltzer

Student Development Team

Ryan Flood

Jake Kushner

Carrie Weintraub

Background

Mercy Home for Boys & Girls is a 501(c)(3) nonprofit residential childcare institution and licensed child welfare agency serving the Chicago area. The organization offers residential child care services for children between the ages of 12-18, while offering additional services such as psychological counseling, intelligence and social exams, and ongoing support for children and families. Mercy Home specializes in cases of abuse, neglect, and unstable living environments.

Project Description

Project Opportunity

One of the key challenges that Mercy Home struggles with is extending their help to families whose children may not be good candidates to live in Mercy Home, but still need help with parenting or issues pertaining to their child. Also, Mercy Home is limited in the number of kids they can accept as residents because of limited space and funding. Furthermore, the home hears from families outside the Chicago area who need assistance, but relocating their children is not always feasible. For of these reasons, the organization wants to provide free parenting advice to families in an accessible format is critical for the organization because it will bring them closer to fulfilling their mission.

Project Vision

Our goal for this project was to create a mobile app with parenting articles and advice for families in need. This would give Mercy Home a way to help families who may be outside the Chicago area, or may not good candidates for their residential services. We weighed the options of creating a mobile app vs. a web site for this information with the client, and decided that the mobile route would make the information most accessible. Key stakeholders for this project included community members who would be users of the app, content writers at Mercy Home who would be writing articles for it, and the Online Marketing team who would be responsible for maintaining the web server and application.

Project Outcomes

We created a mobile application for Android and iPhone with parenting advice from Mercy Home. The app is integrated with a content management system allowing content writers to post new articles and manage categories in the app, without having to push software updates through the App Store and Google Play market. We also created documentation to guide users (content writers in the Marketing department) on how to manage articles, categories, and users in the CMS. Finally, we created an administrator guide detailing how to maintain the server, and re-install the Rails CMS + Java Elastic Search application used by the CMS in the event the server crashes.

Project Deliverables

We have stored our project and documentation on a private GitHub repository hosted by the client. Git Repository with final technical product:

1. **/MobileParenting** - This is where the mobile application's code is held
2. **/Documentation** - This is where the user and administrator guides, ERDs, Architecture Diagrams and other documentation is stored
3. **/TextManagement** - This is where the Rails code for the CMS is held

Recommendations

In order to mitigate the risk of the app having stale content, we recommend the client plans out articles ahead of time, so the content writers always know the next article they should be working on. Also, if the writers get in a habit of releasing content at a set time (e.g. the first and third Monday of every month), then they will be less likely to forget to post.

Another recommendation we would make to Mercy Home would be to publish articles from the app online, either on their web site or on a new blog. This would enable parents who do not own smartphones to access the information. Furthermore, having the articles online would allow readers to share them via email or social networks, which is not possible since there is no way to share a link directly to a page within a native app. Additionally, the visibility from google searching would really further Mercy Home's goal of becoming a leading content expert.

Student Development Team

Ryan Flood served as the lead developer for the mobile application. He is a third-year student majoring in Information Systems. He will be interning at Salesforce this summer and is interested in a career in IT Security.

Jake Kushner served as lead UI designer/developer and co-project manager. He is a third-year student majoring in Information Systems with a minor Human-Computer Interaction. He will be interning with Intuit this summer and is interested in a career in User Interface Design.

Carrie Weintraub served as the primary developer for the CMS and co-project manager. She is a third-year student majoring in Information Systems with an additional major in Business Administration. She will be interning with Apple this summer and is interested in a career in Project Management.

Zero Waste Pittsburgh:

An Initial Waste Audit Reporting Tool

Executive Summary

Community Partner
Zero Waste Pittsburgh
Student Development Team
Jay Chopra
Flavio Fenley
Cindy Zeng

Background

Zero Waste Pittsburgh (ZWP) is an extension of the Pennsylvania Resources Council (PRC) that assists businesses in reducing and better managing their waste. As the core of its mission, ZWP's goal is "to facilitate the implementation and expansion of sustainable waste reduction and recycling efforts by providing up to date resources, assistance and expertise to businesses, institutions and special events throughout the region." The nonprofit has specific programs that focus on recycling and waste management, directed at both commercial and residential clients. This process traditionally begins with a waste audit, which leads to a recommendation of what service could best minimize the client's carbon footprint while maximizing their efficiency. ZWP employs experts in the field to conduct their operations, in addition to collaborating with five other environmental nonprofits across the city.

Project Description

Project Opportunity

Before ZWP can partner with a client company, they perform an initial waste audit to assess what is most appropriate. A representative from ZWP goes to the client's facility and looks at waste management practices only. This involves taking photos of signage, trash receptacles, dumpsters, and interviewing workers and administrators alike. Based on these findings, ZWP comes up with a list of recommendations for the client. In the status quo, a representative records all the documentation by. He/She then has to go back to the office and type of the report, and while there is a standard template, it isn't very flexible, so each report requires a lot of formatting and editing. Overall, for a free service, the process of gathering documentation and then writing reports places a large burden on ZWP.

Project Vision

Our goal is to design and implement a system that will optimize ZWP's Initial Waste Audit with regards to documentation gathering and report generation. The system, in the ideal case on iPad, would be able to take a photo, add notes to it, and the associate it with a line item on the ZIP certification rubric. Based on the documentation gathered, an overall score would be generated to

show how well the client manages their waste. Finally, a report would be compiled that would include text with specific recommendations, the filled out zip certification rubric, and the list of documentations. Ideally, the report text would also be editable, and the report downloadable.

Project Outcomes

With our application, the user can add pieces of documentations and assign them points based on the ZIP certification criteria. In addition, while documentations are being added, the system is automatically compiling the information and generating a report based on the documentations and the grading criteria. Once the user runs through a walkthrough and collects all the documentations he needs, he can already generate a full report in PDF format that can be sent immediately to the client. Not only does the system helps in making the process as efficient as possible, but it also allows for much quicker report generation, which helps increase ZWP's interaction with their client and decrease the cost of a free report. Finally, all of the data gathered is easily accessible and it is also standardized, which helps ZWP with their data management.

Project Deliverables

1. In A web application hosted through Host Monster.
2. A GitHub repository containing all of our code, commits, and documentation.

Recommendations

The initial waste audit tool is a great start to automating and standardizing the business processes of ZWP. Each program they offer could benefit from a similar tool, as well as something to model the complete life cycle of a client company, from the initial waste audit to statistics about how much money and energy they saved through the various programs.

Student Development Team

Jay Chopra is a 3rd year Information Systems student, Jay enjoys learning about technology, as well as reading, history and current events. He looks forward to exploring New York and learning more about technology and business during his internship at Credit Suisse this summer.

Flavio Fenley is a 3rd year student pursuing a double major in Information Systems and Business Administration and a Masters in Information Systems Management. He will be interning at Deloitte this summer and is looking to pursue a career as a technology consultant.

Cindy Zeng is a 3rd year Information Systems and HCI student, who enjoys designing and developing compelling web applications. She will be interning at Drawbridge, a San Francisco tech startup, this summer.

Dr. Phipps – Phipps Garden Center

Executive Summary

Community Partner

Gabriel Tilove

Student Development Team

Kevin Chen

Carlos Diaz-Padron

Andrew Schwartz

Background

Our community partner is Phipps Garden Center. They are the office behind the Phipps Conservatory, with a staff of full time, part time, and volunteers. In terms of relationship with the community, it has the task of keeping Phipps Conservatory running, which itself is a public benefit. This is performed through the organization and training of volunteers, scheduling of events, and other forms of administrative work. Additionally, they also organize classes for people interested in horticulture to take. A program that the Garden Center runs is the Dr. Phipps' GreenLine, a hotline for people to ask horticulture questions to a volunteer Master Gardener. This is a free service for members, and is the focal point of our software development project.

Project Description

Project Opportunity

Our client approached us at the beginning of the semester with a request; a mobile application that allowed users to ask questions and receive answers on botanical topics for the Phipps Garden Center. The questions would be answered by existing volunteers, but instead of the current method of answering emails or phone calls, our community partner wanted an easy to use website that the volunteers could answer questions from. We solved these request using web technologies that we have learned in our previous undergraduate classes in addition to learning new languages and frameworks such as Java and Objective C.

Project Vision

Our initial vision for this project was to provide an easy to use and enjoyable Dr. Phipps' experience for all users. Thusly, we attempted to make the web and mobile applications as logical and intuitive as possible. This was done by implementing an agile methodology where we prototyped and conducted user testing on future users of the system. We also segmented our audience into three users: the question asker, the volunteer gardener, the website administrator, and devised user stories for each of these segments to ensure full coverage.

Project Outcomes

In terms of project outcomes, we have succeeded in fulfilling all of the expected outcomes from our initial project proposal. We have created mobiles applications for Android and iOS, developed an

easy to use web application for the question answerers, and improved on the previously inefficient Q&A process. In terms of people related outcomes, we have also successfully trained the primary administrator of the web application, tested our mobile and web applications with current question answerers, and received valuable feedback from the users on how to improve the system, which we then acted on.

Project Deliverables

In our final report, we have included all of the login information for any applicable software that we used, such as Heroku for hosting and deployment of our web application, GitHub for code storage, and Dropbox for image hosting. We also provide information on how to access the Apple App Store and Google Play store developer websites.

Recommendations

Our recommendations to our client include: ensuring that there is a quick training program in place for the volunteer gardeners, understanding the technical aspects of the system to ensure correct support in the future is received, and recognizing that while our goals from the start of the semester were realized, there is a lot of room for growth.

Student Development Team

Carlos Diaz-Padron is a Junior Information Systems major. Carlos's main responsibilities dealt with the iOS application as well as the back end development of the web application. Carlos will be spending this summer working for Mozilla.

Kevin Chen is a Junior Information Systems major and will be completing his Masters in Information Systems as well as his Bachelors. Kevin's main responsibilities were the written components of the project, the development of the Android application as well as developing the front end of the web application. Kevin will be spending this summer at Deloitte.

Andrew Schwartz is a Junior Information Systems major with minors in Economics and Music. Andrew's main responsibilities dealt with the administrative functionality of the web application as well as all business related activities of the project. Andrew will be spending this summer working for the Panau Ministry of Education.

CompuSpecctions

Executive Summary

Community Partner

John Hayes
Bernie Elder

Student Development Team

Ben Walker
Luke Jasko
Tanuj Apte
Ethan Chan

Background

Every year, the state of Pennsylvania alone generates millions of vehicle inspection records. A large majority of these records currently exist on physical paper, making it extremely complicated to traverse through and manage files. CompuSpecctions solves this problem by providing a software system that creates and archives of state inspection records; this can be used by various auto-shops and inspection stations across the state of Pennsylvania.

The mission of CompuSpecctions is to allow digitization of state vehicle-inspection records for increasing the ease of basic functionalities such as adding, editing and retrieving records or information about them.

Project Description

Project Opportunity

CompuSpecctions currently faces challenges in their pursuit of expanding software distribution, the wish to engage more than 15,000 inspection stations in the state of Pennsylvania. Our team is aiding the organization's high-level goal of designing, developing, testing and deploying a web-based application. This application aims to solve original problems addressed by the standalone software package, while opening new doors for larger-scale adoption across the state. Due to a web-based application's potential to collect vast amounts of aggregated information, it would provide an easier and more effective opportunity to perform big data analysis.

Project Vision

Our work with CompuSpecctions will continue development of a web based application for the company. For the user the benefits are numerous. The ability to share and send off records electronically over the web to headquarters drastically saves time, as opposed to traditional means of mailing and physical travel. This system also eliminates handwriting from the workshop, in turn reducing spelling errors and legibility problems.

Project Outcomes

We had a very successful outcome in our project with CompuSpecctions. We reached all of our marks that were set at the beginning of the semester, in terms of deliverables. Our team worked extremely well together; we utilized a process consulting model and agile development.

Project Deliverables

- Access to currently deployed web application
- Backup and archival for the current state of the application's source code
- Future developers will need to setup github account
- Clone project's repository (source code) into CompuSpecctions' github account
- DigitalOcean credentials and instructions for deployment (*see the Deployment section in the Technical Appendix*)
- Ensure CompuSpecctions' github account includes private repository
- Backup gem versions to repository to ensure dependencies are met in the future

Recommendations

After discussion amongst our team and advisors, we feel that the best next step would be to seek out a professional vendor. We shall elaborate on this later in the report; however, in short, due to the complexity of the project and nature of the application, we feel that student teams will not be able to complete and continue the project in an appropriate timeframe.

Student Development Team

Luke Jasko was responsible for development of the emission panel, implementing features that allow users to upload sets of emission and safety stickers to the system, and finishing the sticker panel. He also served as the team's communication liaison and will begin full-time work as a Software Development Engineer at Amazon in September.

Ben Walker worked on initial development of sticker panel. He is a third-year student majoring in Information systems with a minor in Business Administration. He will be interning at Stubhub this summer and eventually looks forward to a career in project management.

Ethan Chan spearheaded development of dynamically generating Vehicle Inspection Report (VIR) PDF's, managing and adding custom comments/presets for visual inspections, and updating the validation status of inspection tabs. He will be interning at Amazon this summer.

Tanuj Apte was responsible for the front-end design and documentation of the project. He redesigned the admin and manager dashboards for a more intuitive experience and initialized work on the sticker panel. He is a senior Information Systems major with a minor in Business Administration. He will begin work at a green-transportation startup, called Autopods that he has co-founded this summer.



Executive Summary

Community Partner

Hannah Hardy & Phipps LMP Program Staff

Student Development Team

Jia Chin

John Hu

Michael Probbler

Mallory Wang

Project Description

Project Opportunity

Let's Move Pittsburgh wishes to create a method for parents and caregivers to quickly and effectively identify which items to purchase at the grocery store. Many parents are often very busy, and don't have the time to fully consider proper nutrition while shopping, regardless of how educated they are. Therefore, even if Let's Move Pittsburgh were successful in distributing knowledge, there is no guarantee that while making purchasing decisions, parents and caregivers will know what items fit that knowledge. Providing some way to quickly select healthy items will help further one of the main goals of Let's Move Pittsburgh, which is to increase healthy eating for children.

Project Vision

Our team's goal is to design a mobile application that serves as a tool for rating the healthiness of food while the user is shopping. It will accomplish this by utilizing scanning technology to generate a key item that will be used to search a federal nutritional database. The end users of this application will be parents and caregivers that are shopping for their children/families. As mentioned, our solution will allow these parents and caregivers to make quick and informed decisions on food purchases.

Project Outcomes

Our solution serves as a tool for rating the healthiness of food while the user is shopping. Specifically, from the technological perspective, the mobile application can scan a barcode on the food product and display the nutritional levels for fat, saturated fat, sodium and sugar to help the user decide on the healthiness of the product. It will also provide categorized tips on the scanned items as well as general nutrition tips for an educational experience.

From a business and organization perspective, our project will also improve Let's Move Pittsburgh's capacity for handling technology, as our application's backend is a large database, to be maintained and supported. Additionally, staff from all levels, from the executive director to personnel from IT and marketing departments have been involved in the final stretches of the project, and are familiar with its development and deployment.

More than anything, our project will serve as a foundation for further features and improvements. It has great potential to truly benefit our end users and further the organization's mission.

Project Deliverables

The main deliverable is a fully functional, deployed mobile application. The database on the backend will be deployed to a DigitalOcean Virtual Private Server. The ownership of the full code for the application will be given to the client through a github account. To jumpstart distribution, the team will provide LMP's IT personnel with iTunes and Google Play accounts. Full documentation of the code in the form of comments will be included, as well as documentation of how the database was created using the USDA Nutritional database and Product Open Data. Finally, documentation on how to maintain the server will also be given to IT personnel in order to keep the VPS working properly.

Recommendations

Because the team produced an initial version of the application, it is recommended that Let's Move Pittsburgh expand on the features of the application. For example, the application can be expanded by having features such as displaying healthier alternative foods while taking into account price ranges. Furthermore, since the application is only as good as its data currently taken from the public databases, crowdsourced databases can increase the reliability of the application in the event that whereas a product is not in the database, the user can input information. Additionally, incorporating feedback from testing and redesigning the front end as needed can help improve user experience dramatically. Above all, our clients should continue to stay true to their mission. They should gauge the amount of resources to be spent furthering the project in order to smoothly integrate it into their business process.

Student Development Team

John Hu served as project manager. He worked on the backend models and facilitated discussions with the team advisor and the client. He is a Junior with a double major in Information Systems and Business Administration. He will be interning at PricewaterhouseCoopers this summer as a IT consultant.

Michael Probber did a lot of the technology and database work. He came up with a heuristic to rate and combine the two databases, and architected the system as a whole. He also wrote the dashboard for managing the data, and was responsible for getting the front-end and the back-end together cohesively. He is a junior with a major in Information Systems and an additional major in Computer Science. He will be a software engineering intern at Hulu this summer.

Jia Chin served as lead designer. She worked on front-end UI design and created wireframes for client meetings to solicit feedback on the visuals of the application. She is a senior with a major in Information Systems and a minor in Japanese Studies. She will be pursuing a Masters degree in Information Systems Management this fall.

Mallory Wang also contributed to the front-end development of this project. She worked on making the front-end respond to information retrieved from database queries. She is a junior studying Information Systems with an additional major in Statistics. She will be interning at Dow Jones this summer as a developer.

Family Tyes

Executive Summary

Community Partner

Bill Stein

Paul Hindes

Student Development Team

Anthony Corletti

Harris Hartung

Jonathan Lazarowicz

Varun Murali

Background

Our community partner, Family Tyes, like many other non-profits in the Pittsburgh area, is chasing fewer and fewer dollars in the non-profit grant funding market. In the past, Family Tyes has won over grant donors with stories, pictures, testimonies, and videos of their successful school programs and events for youth development in the Pittsburgh area; all of which revolving around the curriculum of fly-fishing, environmental awareness, and developing life skills.

Project Description

With less and less grant money available, donors are looking for something a little more concrete and convincing than just testimonies, stories, and pictures to continue to provide grants for Family Tyes. This is the problem that Family Tyes came to us with. Our solution was to develop a Ruby on Rails web application as a feedback gathering survey system that aggregated results from students in the Family Tyes programs and would be viewable on an easily understood, responsive dashboard.

Project Outcomes

Overall, our project was successful. With extensive documentation on our Github account (github.com/cmu-is-projects/FT_2014) to a lengthy agenda comprised of notes and conversations, to a large test suite, and to a deployed application that is fully functional save for proper dashboard data accumulation and display – our project was a great learning experience concerning what it feels to develop a project for a client outside of concrete requirements and academic boundaries.

Project Deliverables

Our final deliverables included the Family Tyes Attendance Tracking system which was deployed to a Digital Ocean server on the site ftdev.info, as well the deliverables included the git repository, and a final delivery report in which Family Tyes and the development team collectively reviewed the functionality of the system to agree that the final deliverables were in proper working order at the end of the semester for the proper handoff.

Looking forward with the feedback aggregation system we developed on the previously existing attendance tracking system (also developed by a CMU IS team) for Family Tyes, due to a late change in requirements of the system, data aggregation and display in the dashboards is not 100%

functional, but issuing of checkpoints and other necessary CRUD functionality of the system is live at ftdev.info as of 30 April 2013.

Further development of the dashboards is projected to take place for either a continued 475 project or revisited 373 project in the following semesters which is dependent on the feedback Family Tyes has on the checkpoint issuing and data gathering functionality of the final deployed version of the project to ftdev.info.

Recommendations

Furthermore, to develop more of an understanding concerning what went well, what did not go so well, and what recommendations we have; most of this conversation really comes from how we as a team operated and also how we interacted with the client to achieve a common goal for the betterment of their business. Concerning our internal team operation, we believe that the workflow between the team and our advisor was very seamless and well documented. We all came to agreements fairly easily and a shared understanding was established before development or design was issued on a certain portion of the project. Looking back at our internal operations, we felt that our documentation, designing, and developing phases of the project emulate successful teamwork given the time and requirements we had. With respect to external operations, our clients had presented the problem that they were looking to have some kind of way to provide to potential grant donors more concrete data and evidence that the Family Tyes's programs deserved more funding to continue the success they had shown from the data on their programs.

The biggest struggle was not realized until later in the project when our method for gathering such information from students in the Family Tyes programs was seen as overcomplicated and did not meet the needs of our client. From there, this required us to refactor our checkpoint issuing portion of the system and placed the time we had to hook in the dashboard views to reveal the scores from the submitted checkpoint's responses on hold.

This led us to make sure that our system still delivered relevant data and statistics from the issued checkpoints, i.e. storing the responses in the database, however we were unable to display these concisely and simply on the dashboard. While this is not optimal we were able to provide Family Tyes with a system that gathers data for them that they were never able to gather before, and as such can be aggregated in another way to display to potential grant donors for the time being, until this project can be further developed in the future.

Student Development Team

Anthony Corletti c/o 2015 :: Project Manager, Developer. Information Systems Major with concentrations in Economics, Intern at CustomInk (Summer '14).

Harris Hartung c/o 2015 :: Developer & Designer. Information Systems Major.

Jonathan Lazarowicz c/o 2015 :: Design Lead & Developer. Information Systems & Business Double Major, Intern at Boeing (Summer '14).

Varun Murali c/o 2015 :: Technical Lead. Information Systems Major with concentrations in Computer Science, Intern at Wayfair (Summer '14).

Coaching Logistics Project

Executive Summary

Community Partner

Mark Schaub

Student Development Team

Alex Egan

Duan Wang

Logan Watanabe

Delia Zhao

Background

Mark Schaub is an executive at an application company named TapWorx. However, our project's focus is with Mr. Schaub's role as a coach and organizer of a number of sports teams for his children in Chicago. Like many youth athletic programs, his teams are organized by a league but coached and managed by the parents of the players, which means a lot of communication occurs amongst the parents and coaches of the team.

Project Description

Project Opportunity

The current email system used by Mr. Schaub to communicate with his team results in information arriving in large unorganized batches, which makes tracking attendance responses very time consuming. Similarly, organizing carpools is inefficient with a lot of overhead involved for parents. This discourages carpools from being made and results in parents driving when they don't need to. The problem of inefficient communication in this context leads to wasted time emailing, coordinating, and stressing over player attendance and carpools. A solution would address the communication process to eliminate any inefficiencies.

Project Vision

The project solution was to provide a web application for coaches and parents to organize key aspects of player transportation and attendance. This solution provides users with the functionality of RSVP'ing and carpool applications to help organize information for the coach and parents. The application cuts down the amount of back and forth interaction that is typical of email, which requires a lot of confirmations from different parties. The application records attendance from parents through email, and summarizes the results to the coach via email or the web interface. The same is done for the carpool coordination aspect.

Project Outcomes

For coaches, the system allows them to aggregate all the team information, including rosters, event schedules, and attendance. It can track player attendance for events through RSVP emails, and sends summary information for an event the day prior to the coach, significantly reducing the email interaction coaches would normally go through. For parents, the system allows them to access team

information in one place. It also reduces the amount of interaction needed to RSVP to an event and coordinate carpools. The system automatically emails a request 2 days before an event, with links that confirm a player's attendance. Carpooling is handled in the web interface, but only requires two points of interaction, carpool creation and adding a rider, which is less than the current email system. Technically, our application is a web app, running on node.js and MongoDB, using an express.js framework. We've incorporated several node packages to handle emailing, user registration and login, timed emailing, and testing, with Google Maps functionality and jQuery for a mobile design. The application is currently hosted on OpenShift, at <http://production-teammanager.rhcloud.com/>.

Project Deliverables

Our project deliverables include the code base of the application, all of the documentation associated with it, and access to the OpenShift project. The application code was housed with GitHub, and the client was added to the project. The application repository had documentation on setting up and restarting the application, including several aspects of third-party access. GitHub also has the documented issues of the project, which lists resolved and current issues that were found during development. The client was given access to the OpenShift project, to change the live site as needed.

Recommendations

We recommend that if our client is looking to sustain this project as a commercial application they upgrade their hosting service and come up with a name. OpenShift is not a viable option if this application will be widely used, so we recommend our client look into paying for larger, more scalable platforms on which to host the application. We also recommend that the app be given an identity and a name, because it would allow them to use a domain that is easily accessed and remembered by its users. For future development, we recommend that they look to improve the usability of the application. Our group completed the functional requirements given by our client, but the user interface can still be improved. User testing would be helpful in this regard to see where the application is confusing and what might be improved to attract future users.

Student Development Team

Alexander Egan handled email reminders and updates, attendance reporting, management of the GitHub organization and repository, among other things. He is a third-year Information Systems major. He will be working as an intern at Salesforce.com this summer working on the Salesforce1 platform, and looking toward a career in web development.

Duan Wang designed the various layouts of the application, assessed usability, and implemented the front-end pages, among other things. She is a third-year student majoring in Information Systems with minors in Business Administration and Human-Computer Interaction. She will be at Tumblr this summer as a database engineer intern and is looking toward a career in database engineering.

Logan Watanabe served as a developer, among other things. He is a third-year Information Systems major and Business Administration minor. He is interning at Dick's Sporting Goods this summer and is looking toward a career in management.

Delia Zhao aided in designing the layouts of the application, created the events section, among other things. She is a third-year student majoring in Information Systems with a minor in Music Technology. She will be interning with BNY Mellon this summer and is looking toward a career in management.

Best of the Batch Foundation – Project C.H.U.C.K.

Executive Summary

Community Partner

Latasha Wilson-Batch

Student Development Team

Shaun Ford

Samantha Landen

Kevin Louie

Dima Yurkanskiy

Background

The Best of the Batch Foundation is a nonprofit organization based out of Homestead, Pennsylvania that was founded by former Steelers quarterback Charlie Batch in 1999. The goal of the organization is to aid financially challenged youths and their families by providing them with resources to help them achieve their goals. The areas which the organization's programs and events focus on are leadership, community, sports/recreation, education, and fundraising. Within these areas of focus, the organization has developed after school programs and scholarships, in addition to aiding the community by restoring playgrounds, and offering sports and leisure activities.

Project Description

Project Opportunity

Our project focused on Best of the Batch's Project C.H.U.C.K. program, which is a seven week summer basketball camp where students participate in competitive basketball and study halls where they read and discuss books. This program teaches participants "discipline, self-confidence, team orientation, and the fundamental skills of basketball." On average, around 365 children between the ages of seven and eighteen participate in this program each year. This program is important because it not only provides youths with something to do over the entire summer, but also furthers their education and life skills. The processes that currently facilitate Project C.H.U.C.K are completely manual – these include event registration, drafting, and team management. Currently, kids and parents who want to participate in the Project C.H.U.C.K. program must turn in paper registrations forms. Once the paper forms are received, Best of the Batch volunteers must then manually input each child's information into a spreadsheet in order to summarize all the registrants' basic data. The current process requires that the Foundation and its volunteers devote significant effort to data entry and information management.

Project Vision

Our vision for Project C.H.U.C.K. was to reengineer and optimize the current registration and team management processes, in order to reduce the amount of manpower necessary for registrations, improve the clients ability to effectively manage the program, and make the most use out of the registration data (both current and previous). In order to optimize these processes, we envisioned a single web application that would be used to manage Project C.H.U.C.K. from registration to data

extraction. In order to integrate our solution seamlessly with the organization's current way of handling registrations, we planned to deploy the new system in parallel with the current paper-based processes.

Project Outcomes

We believe our project has helped to increase the organization and speed associated with registering for and facilitating Project C.H.U.C.K. Students and parents will have quicker way to register for Project C.H.U.C.K. Volunteers will have to do much less manual data entry, and will have fewer issues because of poor handwriting, or misplaced documentation. Administrators will be able to more easily aggregate student data for analysis and day-to-day management. Sponsors will be able to see the impact their support is having based on the collected demographics. Coaches will have the assurance that their teams are more accurately managed. The establishment of this solution will also act as a stepping-stone towards automating the registration and management of Project C.H.U.C.K. even further in coming years.

Project Deliverables

In our final report, we included pointers to all analysis and design artifacts (e.g., user stories, wireframes, database designs), which are currently stored in Google Drive. We also provided access to the backup solution and survey at 123ContactForm, the custom application source code on GitHub, and authentication information for Heroku for hosting and deployment of our application.

Recommendations

Our team will be piloting our system at Project C.H.U.C.K registration during the summer. Our recommendations to our client include: providing access information for students and parents registering for Project C.H.U.C.K, ensuring there is training program in place for volunteers during registration, and documenting enhancements for future development of the project. Furthermore, we advise future development teams focus on improvement of the quality, scope, and security of the application.

Student Development Team

Shaun Ford worked as the backend developer and Github monitor, assisting in debugging and overseeing pull requests. He is a junior Information Systems major and will be interning for a Software Engineering team at Arris.

Samantha Landen worked as the testing lead and a backend developer on the application. She is a junior majoring in Information Systems and Human-Computer Interaction. This summer she will be working as a software development intern at Amazon.com.

Kevin Louie served as a developer and designer for the team focusing on the front-end development of the application. He is a junior majoring in Information Systems with a minor in Human-Computer Interaction. This summer he will be working at PPG Industries as an Information Technology intern.

Dima Yurkanskiy served as the team lead and client liaison. As a developer, he focused mainly on the client-facing parts of the application. He is a junior Information Systems major and will be interning as a business analyst at J.P. Morgan this summer.

Prevention Point Pittsburgh: Needle Exchange

Executive Summary

Community Partner

Caroline Acker & Renee Cox

Student Development Team

Nicholas Byron

Connie Chen

Byungjoon Yoon

Shalaka Nanda Kumar

Background

Our team worked with Prevention Point Pittsburgh to enable a paperless business process, which increases the efficiency of their reporting. The system that we implemented tracks the end-to-end process of an exchange with a client. It then generates a summary of all data in a singular dashboard for easy visualization. Throughout the semester, our team worked closely with the client to get constant feedback on various iterations of our prototype. Agile development ensures that our final product reflected the client's vision. During the semester, we scaled down the scope of the project for this timeframe and built a minimum viable product. We provided full documentation for the enhanced features that need to be completed before the client decides to launch this system live.

Project Description

Project Opportunity

This organization is currently tracking every client's visit through paper-based forms and manually recording them into an Excel Sheet. The aim of our project is to eradicate the paper system while increasing the efficiency of updating data, storing information and generating reports. An important part of ensuring data integrity is preventing duplicate entries. Assigning each client with a unique ID was suggestion our team sought to implement in order to resolve this issue.

Project Vision

We intended to create an application that seamlessly tracks end-to-end visit of a client at a site and generate reports that the organization can use to seek out potential donors to support Prevention Point Pittsburgh's mission. Volunteers and the management of this organization will use this application to report data while ensuring the anonymity of clients.

Project Outcomes

During the first half of the semester, our team engaged in detailed discussions with our client to map out the business process of the organization into an entity relationship diagram. We developed an extensive technical manual, data dictionary and repository for future developers to continue to working on our project. To enable easy use for volunteers and management, we

created a user manual for the coordinator to train new users of the system. All of these additional outcomes aid our client's use of the application. The application is a database system, which can track the exchange of client and generate reports.

Project Deliverables

We have listed some of the use cases that our database can fulfill which are the key deliverables for our project. For each of the use cases, we have listed the role of the person performing the action. The key deliverables cover the core functionality that our application can perform

- As a volunteer I want digital form that will put the client information directly into the database so I can limit any potential errors made in a later data entry stage
- As the executive director I want reports that are able to measure how many and which services were referred in the month or year so that I can give accurate counts on my applications for government grants
- As a client on the system I want a secure code so that my anonymity will be kept within the organization
- As a staff member I want unique code identifying the users so that I can keep accurate records of their visits and the services we provided them
- As the director, I want to track which volunteer filled out the forms to preserve the quality of the data entry and rectify future potential errors

Recommendations

Our team completed the minimum viable product for our client, which is the crux of the client's visit to the site. However, due to regulation and reporting requirements, it is important that the risk assessment, overdose prevention and law enforcement reports are included before the system launches live. Our team recommends that the organization hire developers to continue working on the other reports and an inventory system. We believe the inventory attribute could help them better manage their supply chain internally at each location. Our team has provided the framework, detailed documentation and access to the code to facilitate this process should our client decide to go forth with it.

Student Development Team

Nicholas Byron was the technical lead. He is a third-year student majoring in Information Systems with a minor in Music Technology. He will be interning at Spice Works this summer.

Connie Chen was the lead project manager. She is a third-year Information Systems student with a double major in Business Administration. She will be interning at JP Morgan Chase this summer

Byungjoon Yoon was the co technical lead. He is a third-year Information Systems student. He will be taking a summer semester at Carnegie Mellon University this summer.

Shalaka Nanda Kumar was the quality manager. She is a third-year Information Systems student with a minor in Business Administration. She will be interning at Deutsche Bank this summer

Six Degrees of Francis Bacon

Executive Summary

Community Partner

Professor Christopher Warren

Student Development Team

Ivy Chung

Sama Kanbour

Angela Qiu

Chanamon Ratanalert

Background

Six Degrees of Francis Bacon (SDFB) is a digital reconstruction of the Early Modern Social Network under the direction of Christopher Warren, Assistant Professor of English at Carnegie Mellon University. SDFB utilizes data mining from centuries of documents to visualize a social network and degrees of separation between influential figures in Early Modern England. The project allows scholars and students from all over the world to collaboratively examine, expand, and curate the connections and relationships among these figures as individuals and groups.

The previous implementation of SDFB was developed by a 67-475 team in Fall of 2013. This version of the application was a web application developed in Ruby on Rails and using MySQL as a database engine. The data consisted of 6,300 names with a matrix of relationships between these individuals. A third-party consultant created a static graphic display of the relationships to be viewed on SDFB. The management of this technology was minimal, requiring the community partner to rely heavily on the 67-475 team and the third-party to make changes to the system, such as adding people to the database for viewing in the application.

Project Description

Project Opportunity

The main problems facing the application include a very large dataset, complicated user interface, and limited capacity for dynamic data expansion. The large dataset causes the system to load or respond very slowly, creating a potentially unpleasant user experience. This dataset is displayed all at once in the application, generating an overwhelming experience that is difficult to understand. Additionally, certain aspects of the application's interface create confusion when trying to comprehend connections between individuals, such as how to navigate the graphical display. Also, the dataset is fixed and the application only allows for the annotation of existing relationships. Being able to add people and relationships would greatly optimize the spread of knowledge and better meet the goals of the application.

Project Vision

The goal for the newer version of the project was to enrich and enhance the user experience that SDFB brings and to better display the data in an informative and useful way. This involved

restructuring the database, manipulating the data in a more efficient manner, and redesigning the application and the display of networks. Stakeholders and users include professors, scholars that dedicate their lives to the subject, and students and others who want to learn more about the Early Modern period. The value of the solution is to create a way to interpret and understand the data in a new way. Being able to look into these historical figures and how they relate will provide insight on the influence of the social networks.

Project Outcomes

This semester's progress on SDFB has resulted in beneficial outcomes to the people, process, and technology involved in the application. People are able to spread knowledge and enhance their own through SDFB's database and crowdsourcing information. The application is now easier to use because of its new method of visualization, allowing users to more smoothly explore the data. The system is also more efficient due to restructuring the dataset in a new database engine.

Project Deliverables

Included in the deliverables are a final report, detailing the final product of the team's semester, the Github repository where all application files are held, and guides for how to use the application as a user as well as an administrator to manage the database.

Recommendations

There still remain opportunities for the expansion and improvement of SDFB. For SDFB to remain sustainable, it is recommended that the contributions be carefully moderated such that the information improved and integrated into the database is accurate and the dataset benefits from it. The application would also benefit the most from frequent contribution moderation so submissions to not pile up and become too overwhelming to handle. A technical recommendation associated with this is for in-app administrator functionality to be developed, so that moderating contributions and editing the database can be done through the interface.

Student Development Team

Ivy Chung served as design lead. She is a junior majoring in Information Systems. She will spend the summer doing research and, in the fall, she will be attending Carnegie Mellon University's Accelerated Masters of Information Systems Management program.

Sama Kanbour lead back-end development. She is a junior majoring in Information Systems at Carnegie Mellon University's Qatar campus and aspires to have a career as a developer.

Angela Qiu lead front-end development. She is a junior majoring in Information Systems with minors in Human-Computer Interaction and Business Administration. This summer, she will be interning in the technology department at Bank of America.

Chanamon Ratanaalert served as project manager. She is a junior majoring in Information Systems and Human-Computer Interaction with a minor in Communication Design. She is pursuing a career in user experience and will be interning at Apple this summer.

Graduate Student Assembly – Tartan Tickets

Executive Summary

Community Partner

Kaycee Palko

Patrick Dustman

Student Development Team

Alan Chang

Alex Mark

Alvin Wang

Eugene Zhitomirskiy

Background

The Graduate Student Assembly (GSA) is the governing body that represents the graduate students at Carnegie Mellon University. Their mission is to “Improve upon the academic support and collegial activities for graduate students.” The GSA is responsible for hosting social events for graduate students and acts as an advocate for graduate students at the campus, city, state and federal levels. GSA hosts a number of social and community events for its members, both within and outside of CMU. Currently, the GSA makes use of the CMU Bridge system to set up and manage the ticket registration for its constituents.

Project Description

Project Opportunity

The GSA constantly holds events for its student base and currently uses a mostly manual system integrated with the CMU Bridge system. With events ranging from a couple hundred to a thousand attendees, a manual system can get easily backlogged and overwhelmed. Creating an automatic system that can be integrated with Andrew authentication would make it incredibly easy for students to sign up while also making it easier for the executives to customize the events and automate the more tedious processes.

Project Vision

Our team's goal is to help facilitate the efficiency of the ticket reservation system in order to optimize the experience for graduate students and the GSA's staff members. From a technology perspective, our team plans to implement this system as a Ruby on Rails Web Application where Carnegie Mellon students can log in, and reserve tickets for student hosted events through our system. We plan on using the Shibboleth Authentication System, the current system that the university uses to authenticate log-in with its students, to allow students to gain access to the system. We are aiming to keep our implementation extensible and well documented so the next team can take the project and make it more centralized for the whole student body.

Project Outcomes

We have created an event registration system for the Graduate Student Assembly through the use of a Ruby on Rails web framework. This system helps organizations manage event-related content. It was designed so that it can be used by multiple Carnegie Mellon University organizations. The system we developed had a large initial scope and our goal was to lay down a good foundation for the application so that future teams could develop it easily.

Project Deliverables

Our team's final deliverables will consist of our GitHub repository and a technical documentation for how to run and set up the server that will host our application. As a part of our GitHub repository, we will include a comprehensive wiki that future development teams can use as a reference so that it will be easier to understand our process while developing this application.

Recommendations

When we were approached with this project, GSA came with a highly detailed implementation plan. We knew that implementing everything would be impossible with our time frame. So we set out to make a minimum viable product (MVP) that could be extended and built upon by further teams. To make this MVP we needed to cut down on a lot of the higher-level features that would really make this tool stand out. Our recommendation for continuing this project and increasing its usefulness is implementing as many electronic versions of the business process. This would be an interesting project for a future IS team to pick up. Instead of focusing on the main backbone and functionality of the site, they instead could focus on implementing specialized and complex extensions that could really make this tool stand out.

Student Development Team

Alvin Wang is a junior Information Systems major who is double majoring in Human Computer Interaction. Alvin was the team's lead developer who was in charge of maintaining our code's quality control and deciding which technologies the team would be implemented in our system.

Alan Chang is a junior Information Systems major with a minor in Computer Science. Alan was one of the team's main developers who was in charge of implementing many of the complicated front-end and back-end functionalities of the web application.

Alex Mark is a junior Information Systems major with a minor in Human Computer Interaction. Alex took the role of a developer and designer, as he was responsible for creating the visual layout of the application and implementing the group's design ideas.

Eugene Zhitomirskiy is a junior Information Systems major with a minor in Business Administration. Eugene was the project manager and his main responsibilities included communicating with the client and adviser to arrange meeting times. He also helped with the development of many of the front-end and back-end components the project.

Citizen Power

Executive Summary

Community Partner

Janice Serra and Ted Robinson

Student Development Team

Won Seong Kim

Yun Gi (Lisa) Jung

Sung Beom (Steve) Cho

Sung (Sam) Kim

Background

Citizen Power is a non-profit environmental and consumer advocacy organization that has run programs to benefit people in Pittsburgh and Pennsylvania for the past 20 years. They not only seek to “promote public understanding of social, economic, and environmental issues” but also conduct research and make information available to the community via various types of appropriate public fora. Currently, the organization primarily focuses on energy saving and healthcare.

Project Description

Project Opportunity

Citizen Power’s main problems were with their website, lack of maintainability and ambiguous brand image projected through the website. With no assigned personnel in charge of technology and web development, Citizen Power’s website had been updated under the antiquated framework built in the early 1990s with total number of files for the website now exceeding thousands. The intertwined web made it almost impossible to modify the website in a user-friendly manner and as a result, the organization had not been able to develop a clear identity for its online visitors, unable to create a significant online presence.

Project Vision

Our project’s vision was to create a user friendly website that is sustainably and maintainable. Our website would re-organize the complex web of information on the existing website and thus enhance design qualities and navigability. By doing so, we further aimed to strengthen the organization’s brand online. Maintainability would be achieved by providing a content management system through which staff would be able to modify the website using Graphic User Interface, by clicking buttons and dragging icons, without having to deal with any actual codes.

Project Outcomes

Some of the main outcomes of the project were better user experience in the website, enhanced brand identity, mobile-friendliness, facilitated process of website maintenance and cost savings. By providing a clean, simple website, we aimed to improve user’s experience specifically focusing on the navigability, simplicity and design qualities. In particular, through a sliding banner on the main

page, we attempted to tell a story about Citizen Power, which would help online visitors understand its identity. We also provided a mobile version of the website so that it is accessible from a mobile device. Finally, we hosted the website on WordPress's content management system by GoDaddy, which resulted in some cost savings and would significantly simplify the process of website maintenance, including updating pages and publishing posts.

Project Deliverables

Our deliverables include a website constructed with WordPress framework for online visitors and a content management system that allows Citizen Power staff to update the website easily. We have also delivered a brief manual narrating the basic functionalities of the content management system.

Recommendations

Lack of a centralized database was a weakness that we had identified at the beginning of the project. Due to the relatively small size of the organization, the issue was not imminent, but a centralized consumer database would vastly improve the process of consumer registration and management in the future. Taking advantage of a simple ready-to-use database solution is recommended.

Student Development Team

Won Seong Kim served as project manager. He is a third-year student majoring in Information Systems with a minor in French and Francophone Studies. He will be interning at Deloitte Consulting this summer and is looking toward a career in management consulting.

Lisa Jung was the design lead. She is a third-year student majoring in Information systems with a double-major in Human Computer Interaction. She will be interning at Apple this summer and aspires to pursue a career in user experience design.

Steve Cho led the document production and coordination. He is a third-year student majoring in Information Systems with a minor in Business Administration. He will be working on web development over the summer and is interested in a career in technology project management bridging technology and business aspects of an organization.

Sam Kim was the technical lead. He is a third-year student majoring in Information Systems with a minor in Computer Science. He will be working at Goldman Sachs this summer and is interested in a career in technology consulting

Gelfand Center Background Check System

Executive Summary

Community Partner

Judith Hallinen

Student Development Team

Sankalp Kulshreshtha

Sethu Prakasam

Cory Williams

Jeremy Chiang

Background

The Leonard Gelfand Center coordinates learning outreach activities in the Pittsburgh community for Carnegie Mellon University students, faculty, and staff. In the process of gaining clearance to work with minors, individuals run through criminal background and child abuse checks that can take several weeks to complete. Carnegie Mellon University's Board of Trustees has tasked the Leonard Gelfand Center with overseeing and tracking this process. The current model of using spreadsheets to manage information is not scalable and the center is searching for ways to improve the system.

Project Description

Project Opportunity

With this project we had a chance to make a real difference in the community. The Gelfand Center acts as the valve through which Carnegie Mellon organizations flow through and reach children. The programs spark children's curiosity for various subjects and cultivate a love of learning. However, in order to work with minors, individuals must first complete a background check. Prior to our involvement, the Gelfand Center kept track of these background checks through a Google Spreadsheet. This meant checking and updating the background check status was inefficient and unscalable. With a more streamlined process, the Gelfand Center would be able to perform its operations more efficiently and subsequently augment their ability to reach out to the community. Another outcome of this would be an enhanced ability to keep track of the Gelfand Center and consequently Carnegie Mellon's overall impact in the community.

Project Vision

Our vision has been to create a web application that eases the process of getting someone cleared to work with minors and also helps the Gelfand Center stay in accordance with Carnegie Mellon's new policy. With the private nature of the information being stored, the application has to be secure and easy to manage. In addition, organizations should be able to manage and understand whether their members are cleared to work with minors on a given program.

Project Outcomes

Judy, as our client, played a vital role as we progressed in implementing a usable technical system. We had weekly meetings where we discussed critical aspects of the project and discussed vital steps on how to progress our solution. In the initial stages, our team conversed with many key individuals. We spoke with the Computing Services technical team regarding hosting possibilities and legal council, Dan Munsch, to determine whether we are compliant with relevant laws. Our meetings with Professor Mertz helped us gain insight as to the pace we were implementing the solution and we received essential advice as to which people would be the best to contact. By following an agile development process we provided results every week. There were tangible outcomes seen each week that the team used to gauge the progress of the consultation process.

Project Deliverables

For the project deliverables, we submitted items related to the design and documentation of our application. This includes wireframes, entity-relationship diagram, and use cases. In addition, anything related to the deployment of the application will also be handed off. This includes a codebase, an application hosted on a cloud server, and the necessary credentials to access all of these materials with documentation. Last, we will summarize and deliver key conversations with various stakeholders that influenced the design of the system.

Recommendations

Moving forward, we have several recommendations for our client. First, in regards to the sustainability of the project, the Gelfand Center should hire someone to continue development and maintenance of the application. This developer would be able to add new features, fix bugs, and guide any needed changes. Second, in relation to deployment, the Gelfand Center should either host the application at Carnegie Mellon University or work with the Information Security Office to ensure the current cloud solution meets university standards. Last, the Gelfand Center should have a backup system and disaster recovery strategy in place.

Student Development Team

Jeremy Chiang served as Project Manager and Client Contact. He is currently in his third year studying Information Systems with an additional major in Business Administration. Jeremy will be working as a Product Owner/Manager for Fino Consulting in New York City this summer.

Sankalp Kulshreshtha served as a designer/developer. He is a fourth-year student majoring in Information Systems. Sankalp will be working as a software engineer at Dot & Bo this summer and looks forward to an entrepreneurial career after graduation.

Cory Williams served as a QA lead, designer and developer. He is a fourth-year student in the Information Systems program. He has interned at PepsiCo as a vending innovation team member, and looks forward to a career in software engineering.

Sethu Prakasam served as developer and designer, incorporating features such as mail delivery to prompt user for sign up. He is a third-year student majoring in Information Systems with a prospective Spring 2015 graduation date. He will be interning at CoachMeInc. this summer.