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CPSC 490 Special Projects

Proposal: Advertisement Generation and Matching Preferences

What is the project?
This project involves creating an algorithm and building a web application that will automatically generate many different versions of brochures or advertisements for the user. The information and content that would go on the advertisement will be collected automatically from different web APIs. This includes Facebook, Twitter, Google (potentially results returned from search). My project will be able to assemble several different advertisements at each click of the button.

Additionally, I would build an algorithm that could efficiently match users with their preferences in advertisement design. This algorithm would best inform how an advertisement is generated depending on the user's decisions to rank each advertisement that appeared before them (1 - 5 stars). The user must rank each advertisement, and choose to either keep the advertisement or generate another one. Keeping the advertisement would obviously signify the end of the search. The algorithm would intelligently use those preferences to try to match the user with an optimal design and layout for their advertisement.

Deliverables
Finished by the midterm:
1. Wireframes detailing the Frontend functionality and design of the web application
2. Diagrams detailing backend and database architecture
3. Finished algorithm detailing how users will be matched with their preferences for the advertisements.

Finished by the end of reading week:
4. Completed Application website
5. Several samples of generated works (advertisements)
6. All source code open sourced on Github
7. Final written report detailing the journey
8. Abstract and website for final submission, containing the above deliverables
What is the significance of this project?
I believe that this project will add value by giving online users a new, simpler way to create their own advertisements automatically, and allow them to generate several different advertisements in seconds. This is both efficient and cost effective for those who want to publish their materials online or in print.

This would be a beneficial project for small organizations and businesses with limited resources and no design help. They would be able to create a marketing presence without any artistic or coding knowledge. Additionally, it is fast because it pulls readily available information about their organization/business from online.

Why do I want to pursue this project?
My goal for this project is to spend dedicated time to drastically enhance my experience with the LAMP stack, as well as develop with some of the newest technologies, frameworks, APIs, and practices today.

It is said that the Yale CS department will provide undergraduates a solid foundation upon which to begin their foray into the large and complex world of computer science and programming. I strongly believe this, but I do want to put this to the test. Given that no Yale CS courses currently focus on web development, I think that it is essential for me to spend a dedicated portion of my curricula learning and expanding on the fundamentals of creating web applications.

Additionally, I am very interested in acquiring the skills necessary to develop my own applications. I am interested in entrepreneurship, and have until now resigned myself as a business co-founder, not considering that I can spend much of my time engaged in the actual product development. I hope this intensive exercise will change that, and give me the foundation necessary to contribute technically to a founding team in the future.

What is my current experience?
My current knowledge of web development includes working with Wordpress and static websites. I have never built an entire web application from scratch before. I have a cursory understanding of the underlying technologies that I will need, but I have never set a schedule for myself to take the time to learn and work with each.

As such, I believe that this project will be personally challenging and rewarding for myself, to develop a completely new skillset. I believe that my background in C, python, and java will allow me to learn relatively quickly.

What technologies will I be using/learning?
HTML, CSS, Javascript, JQuery.
LAMP stack. Popular stack for building web applications. I have some minor experience with MySQL and other scripting languages such as python.
Application Interfaces (APIs): Facebook, Twitter, Google, etc.
Why the Yii Framework?
Another one of my motivations for completing this project is to thoroughly study and gain experience with the Yii Framework for PHP.

Yii is short for “Yes-it-is!” It is an open source, object-oriented, component-based PHP application framework. It derives its namesake for it’s versatility, able to adapt impressively for both rapid prototyping, and large projects that need security, speed, and scalability. It is predicted to soon be one of the highest performing frameworks available to developers.

Frameworks have been recommended as the best approach to rapidly and successfully develop any PHP application. This is because developers can leverage the many libraries created and tested by the creators and community (if open source). This prevents a lot of re-inventing the wheel. There are several other widely popular PHP frameworks on the Internet today, such as Zend, Cake, Symfony, etc. Yii is one of the most recent to appear on the scene in 2009, and has been regarded as the next biggest framework because of it’s lightweight qualities, as well as it’s dramatic speed enhancements once Alternative PHP Cache (APC) is enabled. It realizes these speed enhancements by not needing to compile each referenced library (from the framework) at the beginning of each file until that library is explicitly called.

The Yii Framework’s features include
-DAO/ActiveRecord
-I18N/L10N
-caching, authentication and role-based access control
-scaffolding, testing, etc.
It can reduce your development time significantly.

The Yii Framework is high performance and organized in the Model-View-Controller (MVC) fashion. MVC frameworks are great because separates the representation of information from the user’s interaction with it, giving the advantages of code re-usability, as well as the separation of concerns.

I will also use the following textbook on Yii to help me guide my learning:
I hope to finish the guided material early in the semester so that I can begin development on my application.