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2012-19671

CMSC 198 AR9

Final Report

The company where the internship took place was at Institute of Computer Science of the University of the Philippines Los Baños under the supervision of one of its faculty members. The key focus of the company was to generate and accomplish projects which would be viable for future use in the different departments/institutes of the University as they see it fit for their utilization and benefit. The structure of the company comprises of a supervisor who takes in a specified number of students that will work on a project which will be developed under their supervision. However, the students are free to explore on how they will be able to do their assigned tasks. The work ethics and culture of the company is similar to how the students should abide by the University and the institute's rules such as a proper dress code, consistent attendance and punctuality in meetings, and maintaining a clean and functional workspace.

As an intern working under the company, one of the responsibilities was to perform the tasks for the completion of the project which were given weekly and to it is needed to accomplish the given tasks within the specified time interval. At the end of the week, the intern should be able to attend the weekly progress reporting, to present their work, and be assigned new tasks which will be done for the following week. It is also given that interaction with co-interns is a prerequisite when doing tasks designed for a group set-up. Finally, the intern is responsible for their actions, may it be their activity inside the workspace, the number of minutes spent during breaks, or for utilizing and/or safekeeping the computer equipment during their stay.

The following are the set of problems given to be solved and tools used: 1) reviewing the interface and overall flow of the project's system and fixing any errors/inconsistencies found. No external tools were used but simply documentation and error fixing was done to resolve the problem in this field, 2) addition of a new functionality to the project. Assigned to be done was image reading through optical character recognition (OCR). Research was done about the topic, external codes were used and applied to the project specifically the one from OCRAD.js since it was the one module which works best with the project, 3) file conversion, notably conversion of PDF files to image files in order for

PDF files to be subjected to image reading. The external codes used were based from PDF.js and thus helped solve the problem in this field. The last task, 4) finding an algorithm which finds the last value in the scanned image, was the most difficult to accomplish.

The following are the descriptions of the specific tasks given: 1) simply review the interface and overall flow of the project's system, prepare a document to list down observations, then fix the error/inconsistencies found in the project, Moving on to a new task, 2) incorporate a new functionality to the project which reads character on images and allow the value read from the image be viewed and edited on the client side. This task made use of OCR, therefore an external program which performs OCR was to be researched about and be incorporated in the project. As much as needed, image editing came hand in hand with the second task in order to get the best out of the expected output. The similar approach was to be done on PDF files, therefore 3) a program for converting of PDF files to image files was also to be included in the project in order for OCR to be performed on the data that can be found on the PDF files.

The first task asked for a document which lists all of the errors/inconsistencies in the webpage, therefore a simple Word document with screenshots was prepared for all the observations made. The second task as mentioned before made use of OCR, therefore a program which performs that was added to the project. The program chosen for the project was OCRAD.js since it is web-based and works compatibly with web-based applications which the project is one. In editing images, it is worth commenting that the canvas tags in HTML 5 is very useful when it comes to the task and can be done using the simplest of available JavaScript functions. PDF.js was used in the conversion of PDF files to image files. HTML 5 canvas tags were used in generating the images but PDF.js is the main program which executes the conversion process.

With regards to what is used for the project, Laravel is one of the better PHP frameworks to be used in deploying web-based applications. It is neat and fairly easy to install and use. OCRAD.js is a program which performs OCR. It is compatible to be used in web applications which require image reading similar to one of the functionalities of the project. PDF.js, like OCRAD.js, is compatible with web-based applications. It is easy to use and can do more than just conversions but also the viewing and usage of PDF files.

A suggestion regarding OCRAD.js on image reading is that it is the program which would work best with web applications although its character recognition is not as accurate as that of another

program named Tesseract which does the same task in image reading. The conflict is that Tesseract is not web-based, therefore OCRAD.js was chosen to accomplish the task. However, PDF.js is definitely easy to use and very functional in the sense that it has the functions needed when viewing, using, and converting PDF files.

Aside from the framework used to deploy the project, OCRAD.js and PDF.js are both technologies which would perform image reading and PDF manipulation tasks respectively in a web-based level. Both are not necessarily new but it is recommended to be studied more on. In conclusion to this, it can be said that tools used in order to solve the given problems and accomplish the assigned tasks were all gathered through extensive research. Additionally, it is best to use the module which would work best with the project and will get the task done.

Recommendations for a better way of learning would be conducting research on the existence of other web-based technologies that performs OCR is more accurate than the performance of OCRAD.js and its output. Another recommendation is that as early as the concept of HTML is being taught, include the topic of using the canvas tags in researches and studies since it is a great help when it comes to image editing in web-based applications. Similarly, studies should be done on Laravel and the PHP framework should be used more on implementing web-based project as it apparently lacks recognition in the web programming field.

RNC RECARLO 07/22/15

Company supervisor