# Final Reflection Report

**I. General Information**

Project Title: Full Stack Web Dev AI

Submitted by (insert names of team members): Lyndon Renaud, Ian Straatman, Zhao Hongqian

Submitted to (supervisor name): Dr. Selvarajah

Date submitted:

**II. Discuss your accomplishments and experience in the project. You should comment on the following areas. (Please use additional pages, as needed.)**

**a)** Describe your most important accomplishments in this project. What milestones have been achieved. What remains to be done. *(200 – 300 words)*.

Our most important accomplishment in this project has been successfully and accurately segmenting hand drawn textboxes and writing. This task was exceedingly difficult for us, we had tried many different approaches and techniques before finding the way that worked best for us. This accomplishment was especially important because we were then able to continue building the rest of our project on top of these two essential parts. Another important milestone that we achieved was creating our first working demo that allows users to get a full stack web application from a hand drawn picture. This first demo is only partially complete since it can only identify and create a web application for textboxes and labels. What remains to be done is to keep making the demo larger and more inclusive in terms of identifying more form elements. This means that we should be able to identify more than just textboxes and labels, such as buttons, file inputs and any other form elements. With the knowledge and experience we have gained while building the first demo, adding additional form elements should be easier and quicker than before. Each additional form element we try to add will present its own unique challenges, however, we are more knowledgeable and experienced in this process and should be more efficient in the future.

**b)** Reflect on the work breakdown structure and timeline given in your project description. Did your project progress according to what was indicated? Discuss any deviations from the WBS that was projected. *(100 – 200 words)*.

We followed our work breakdown structure accurately with only some small deviations. However, our timeline was different than expected. The actual process of our project was close to what we had initially planned for ourselves. We first did preliminary research on the different topics of our project and then worked on binary classification of form elements, followed by the combination of these binary classifications into multiclassification. After multiclassification, we used this to generate a rest API for the given photo. However, we planned to do this for more elements than just textboxes and labels. Therefore, our WBS was followed accurately but our timeline was incorrect, and the project did not progress as quickly as we had hoped. This was likely due to some delays caused by a difficulty in binary classification of labels and textboxes. Given more time and the knowledge gained from our previous mistakes, the project would have had fewer deviations from the WBS.

**c)** Discuss your experience working on the project. What went right? What went wrong? Any other comments. *(100 – 200 words)*.

Our experience working on this project was very educational and we feel as though we learned a lot. There were some problems with reading the text. In the text reading, there may be the problem of reading the box instead of text and the possible unreadable text. For example, a random tick might be read as "rt". But we got a better answer after further discussion between our group and more research. We cut the picture first and then read the text to avoid text reading errors. We have also discussed some of the better options for in-text citations and version selection.

Box processing at the beginning had some problems with our idea, which made it impossible to read pictures of boxes that were not drawn perfectly and test the corners. The errors that may occur in hand-drawing are ignored. However, under the possibility of testing the line and ignoring the corners to test the four lines, the detection of the box and the reading of the coordinates are more perfect.

**d)** Discuss your key takeaways from this experience. What is the most important thing you learned? If you could go back, would you change anything? Explain. *(200 – 300 words)*.

Since we are unfamiliar with computer vision and machine learning, it would have been prudent to schedule more time for researching the fields. We initially split up the project tasks between group members but did not consider the difficulty of the tasks. This approach failed because some tasks are of great difficulty and are too much work for a particular group member to do alone. If we had considered the difficulty of each task in the work breakdown structure, then we could have assigned the most difficult tasks to all group members. This would allow us to have multiple perspectives of a single problem, making it more efficient to test different solutions.

As we wrote the project code, we had to create a lot of code files for the project tasks. The project folder soon became cluttered and hard to understand. This issue was later solved by organizing the code into folders for each module, but it would have been easier if we had decided on a basic project folder structure before coding. Since we are unfamiliar with computer vision and machine learning, we should have focused more on documenting code. Code documentation would have made it easier for everyone to understand solutions and would make our results easier to report on.