INDUSTRIAL TRAINING REPORT

AT

GEO SENSE SDN. BHD.

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INTRODUCTION

1.1 Introduction

Industrial Training is an activity that aims to provide supervised practical training within a specific duration. It is a primary program that needs to be done by the students in certain program at all levels for Institute of Higher Learning (IPT).

1.2 Objectives

The objectives of Industrial Training are to:

i. Helps student in exposing them into real-world activities based on the field of study they took during years of study
ii. Helps them in terms of technology development, communication, teamwork, procedures, professional perspective and reporting
iii. Provide opportunities for students to gain working experience in industry or organizations related to their respective fields

1.3 Importance of Industrial Training

The student will be able to:

i. Improve their knowledge and accomplishments relevant to their field of work
ii. Student can participate in teamwork from different ages in which they need to more mature at work.
iii. Give student to understand about their study and hands on practice within a real job.

1.4 Conclusion

As conclusion, Industrial Training polishes the soft skills and professionalism of students that helps them to be ready to face the job life later.

CHAPTER TWO

ORGANIZATIONAL BACKGROUND

2.1 Introduction

Geo Sense Sdn. Bhd. provides large scale high resolution aerial mapping using glider base unmanned aerial vehicle (UAV). The images are mosaic and registered for high accuracy and geographic information system (GIS) integration. Since 2008, we are among pioneer companies that provide large scale UAV aerial photography and mapping. With UAV we able to provide aerial mapping service on demand and deliver premium quality images, that outperform the resolution of other sources. To complement our high-resolution aerial mapping, Geo Sense also provide services in capturing street level images using latest image capturing technology. Geo Sense also collaborate with local professional partners in integrating our images for land survey verifications, property valuation and civil engineering certification.

CHAPTER 3

INDUSTRIAL TRAINING ACTIVITIES

3.1 Primary Task

3.1.2 Introduction

The primary task given is to develop a system to count palm trees using images captured by UAV. Previously, the staffs have to count the trees manually. This is labour and time intensive.

3.1.3 Problem Statement

Problem statement that are related:

i. Difficulty in identifying palm trees
ii. Previous method is labour and time intensive

3.1.4 Objective

i. Develop an automated system to count palm trees by using UAV images

3.1.5 Scope

The scope of the project is Felcra Kampung Wa, Dunggun, Terengganu.

Figure 3.1: UAV image of Felcra Kampung Wa

3.1.5 Methodology

There are two methods which are used in this project:

i. Template matching
ii. Convolutional Neural Network

3.1.5.1 Template Matching

Template matching is a technique for finding areas of an image that match (are similar) to a template image (patch).

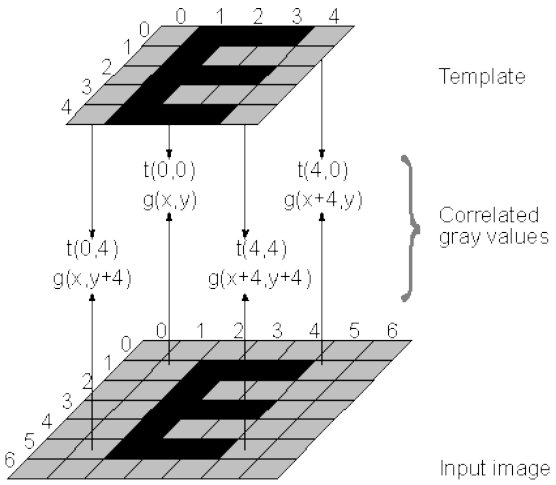


Figure 3.2: Template matching example

3.1.5.2 Convolutional Neural Network

In deep learning, a convolutional neural network (CNN, or ConvNet) is a class of deep neural networks, most commonly applied to analysing visual imagery.

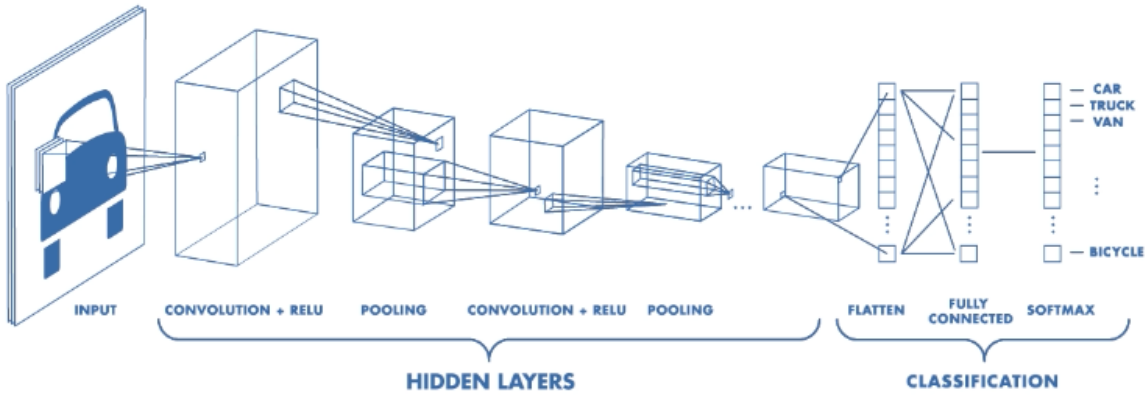


Figure 3.4: Example of Convolutional Neural Network

3.1.6 Result

3.1.6.1 Template Matching

OpenCV was used. A total of 100 templates were used. Using this method requires no training time but the result is not accurate.

3.1.6.2 Convolutional Neural Network

The You Only Look Once (YOLO) CNN model which was implemented using Keras with TensorFlow backend was used. A total of 60 images which contains approximately 100 palm trees was annotated. This method is more accurate but requires a lot of training.

3.2 Industrial Training Activities (Others Activities)

3.2.1 Test Flight UAV

DJI Phantom 4 was flown to test its capabilities and image quality.

Figure 3.5: Preparing for flight

CHAPTER 4

CONCLUSION AND RECOMMENDATION

4.1 Introduction

The industrial training gives benefits to students especially to help them in exploring real world industry related to their field of study. For the system objective, all of them have been achieved. Also, this system already got the market to be sold. For the future, this system may have to be enhanced to be tally with the rise of new technology.

4.2 Contribution of Industrial Training

With the accomplishment of primary task and preliminary task, the contribution shows that

the Industrial Training:

i. Creates a marketable product for the company itself based on the company demand.

ii. Wider the view of the Geo Sense staff in aspects of drone technology, GIS software.

4.3 Recommendation and Future Enhancement

There are a few of recommendations to Tess International which is:

i. Expand the knowledge of student with several of job scope in IT field instead of ask students to focus on one primary task until end of internship.

ii. Expose students with real life working life like attending meeting, deal with network and hardware.

After developing the palm tree counting system, there are several suggestions to make this system more marketable, more functions and friendly to the users.

i. Instead of making this system only applicable for palm trees, my opinion, this system should be integrated for trees such as banana plant so that it can be marketed towards a wider market.

ii. Expand the system to detect besides trees such as houses, street lamp in the future.

4.4 Personal Reflection

From my experience, industrial training helps me to be a problem solver and how to work in team as well as working individually. I also learnt how to be a good worker in terms of managing my attitude and personal behaviour where I always attend to work before 9 and wearing formal attire to work. I also learnt how to socialize with people regardless age and race. I was very lucky to be part of Geo Sense team because all of them are very helpful and bright.

4.5 Conclusion

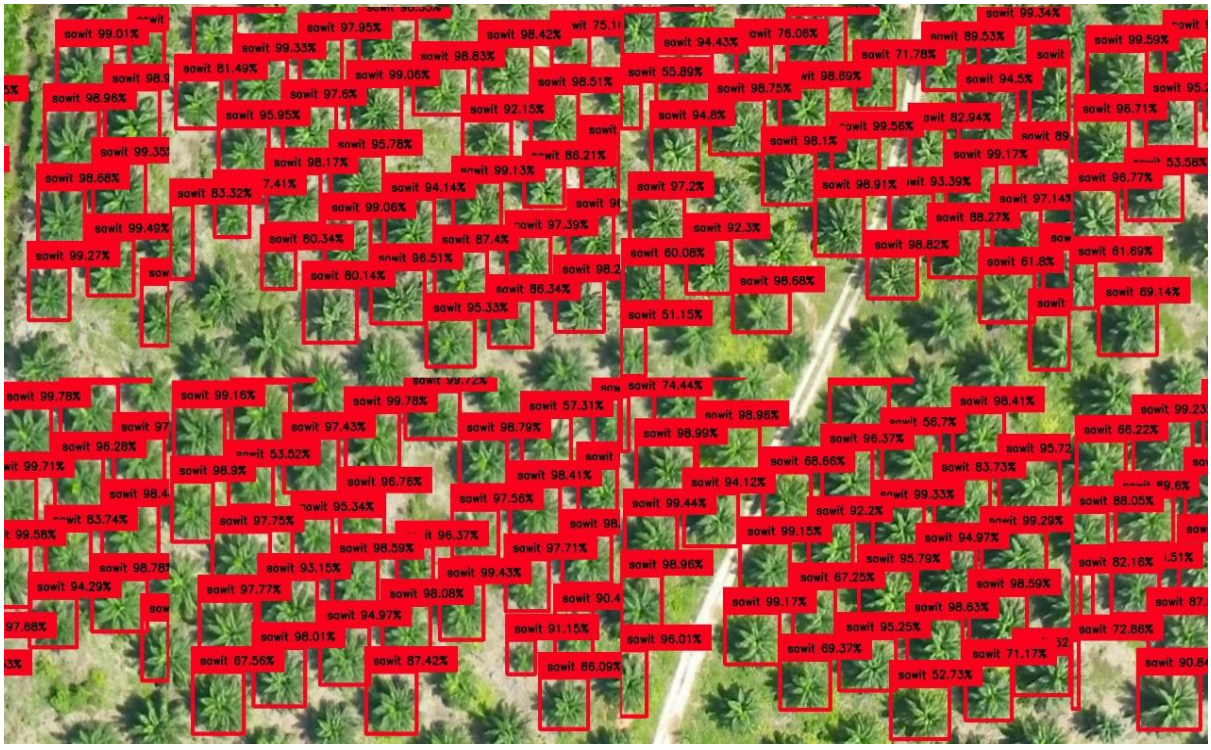
In conclusion, students should undergo Industrial Training because it helps students in exposing them into working life as well as providing them a lifelong learning experience. Industrial training also gives benefits for employers in terms of the quality of support, fresh ideas and energy that the student brings into the work environment. Last but not least, industrial training helps in building student's strength in soft skills and technical skills thus helping universities to produce fresh graduates with the ability to conquer the working industry.

APPENDICES

Appendix 1: Sample template for template matching

Appendix 2: Result of template matching

Appendix 3: Annotate image using labelimg



Appendix 4: Result of CNN