

**NANYANG
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UNIVERSITY**

SINGAPORE

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YOUR NAME

SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

2021

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SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE IN XXX**

2021

Statement of Originality

I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution.

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Abstract

Facial blemishes, such as acne and pigmentation, significantly impact skin health and play a crucial role in the perceptions of age and beauty across various age groups and skin tones. The lack of robust simulation techniques to assess changes in facial blemishes present a notable challenge to the skincare industry in studying the efficacy of skin care product and demonstrating it to consumers. To bridge this critical gap, we propose an efficient framework for simulating changes in skin blemishes. Our method is based on prior knowledge that links the appearance of acne and pigmentation to melanin and hemoglobin chromophores under the skin surface. Our novel framework models the spatial distributions of chromophores based on the optical scattering properties of the skin. A unique feature of our method is the precise and stable manipulation of parameters of chromophore distributions, thereby enabling control over the appearance of skin blemishes. We validate our proposed method using a comprehensive dataset containing temporal data on long-term skin blemish changes. Our results show that our method achieves highly realistic simulations. Furthermore, a visual perception study has also demonstrated the authenticity and quality of our simulation method.

Keywords: Dissertation, keywords.

Acknowledgements

Acknowledgements is to express thanks and appreciation for those who helped in this project.

Acronyms

NN	Neural Network
ML	Machine Learning
DL	Deep Learning
FCN	Fully Convolutional Network
CNN	Convolutional Neural Network
RCNN	Region Based Convolutional Neural Network
DCNN	Deep Convolutional Neural Network

Symbols

Π An Pi Symbol
 β An Beta Symbol
 σ An Sigma Symbol
 α Another Alpha Symbol

List of Figures

1.1	Bounding-box example of cars.	2
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List of Tables

1.1 A table without vertical lines. 1

Chapter 1

Introduction

The first chapter of the dissertation is almost invariably the Introduction. Generally, its purpose is to lead the readers into the problem you intend to attack in the project, to set the scene. The main points here consist of the background to the problem and your motivation in solving it. This then leads into the objectives and the scope of the project. It is good to conclude your Introduction with a section on the layout of the dissertation. It prepares the readers for what is to come

1.1 Background

Background goes here. Also you can put in some references [1].

Here is a sample of table in Table 1.1

Table 1.1: A table without vertical lines.

	Treatment A	Treatment B
John Smith	1	2
Jane Doe	–	3
Mary Johnson	4	5

Use `\newpage` to force start a new page.

Also can try to refer to this image in Figure 1.1. Notice that the .eps and .pdf format vector graphs are favoured, because:

1. they can be zoomed-in to check the detail.
2. text in such formats are search-able.

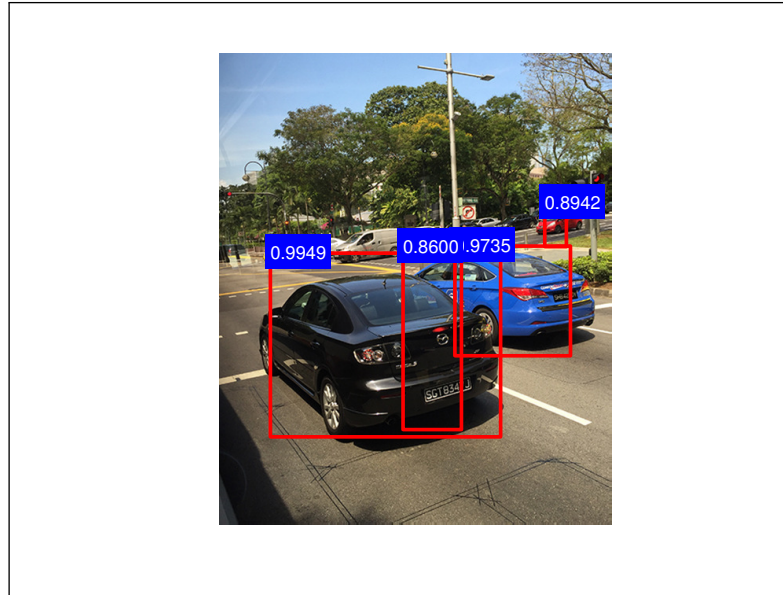


Figure 1.1: Bounding-box example of cars.

Try to insert a math equation as in Equation 1.1. If you wanna try the in-line mathematical, here is a sample $\alpha = \pi \cdot \frac{1}{\Theta}$.

$$e^{ix} = \cos x + i \sin x \quad (1.1)$$

Also here is a sample for footnote and hyperlink url¹.

When mention some file formats can use music.mp3, latex.pdf, etc.

If there are any update of the dissertation standard, or you want to contribute

¹<https://github.com/doem97>

to the NTU-EEE-MSc-Dissertation-Template project too, kindly send an E-mail to me. Thank you :)

1.2 Motivation

1.3 Objectives and Specifications

1.4 Major contribution of the Dissertation

1.5 Organisation of the Dissertation

Chapter 2

Literature Review

2.1 Overview

Then comes the main part of your work. To lay the ground, there should first be a chapter on what has been done before on the problem - a Literature Review. This is an important section because it shows that you do not narrowly focus only on what you do, but are aware of the related work elsewhere, some of which might be instructive to your solving the problem. It can also explain why you are taking the direction you do.

2.2 One

(Co-localization methods of auto-drawing bbox)

2.3 Two

(Propagate bbox by co-segmentation)

2.4 Three

(Suggesting images to users)

Chapter 3

Approach

3.1 One

The next few chapters should describe the work you have done in tackling the problem. There might be a chapter on the fundamental theories relevant to the solution you are pursuing, or the supporting technologies you need in implementing the solution. Then there should be a chapter on the solution itself, followed by a chapter on the results and analysis of the results

3.2 Two

3.3 Three

Chapter 4

Test and Experiments

4.1 One

4.2 Two

4.3 Three

Chapter 5

Discussion

5.1 One

Generally, there should be no more than six or seven chapters in your dissertation. If you have more than that, you should take a close look at its organisation and see if certain chapters can be merged.

5.2 Two

5.3 Three

Chapter 6

Conclusion and Recommendations

6.1 One

The last chapter is always the Conclusion. This generally should have three parts. The first is a concise summary of the work you have done. In a way, this is similar to the abstract. Then there is the conclusion, in which you highlight the significance of the results, and perhaps the consequences of the results, critically where necessary. The last thing is usually recommendations and/or future work, in which you identify the inadequacies of what you have done, and suggest how the gaps may be plugged.

6.2 Two

Documents that are prepared with the help of other sources should have a list of sources cited. A list of References contains only sources the writer quotes directly, takes original ideas from, and refers to in the dissertation should be included. In reports where the subject is primarily scientific, the list of references is the most widely accepted way to cite specific sources.

6.3 Three

6.4 Four

6.4.1 Six

References

- [1] Olaf Ronneberger, Philipp Fischer, and Thomas Brox. U-net: Convolutional networks for biomedical image segmentation. In *International Conference on Medical image computing and computer-assisted intervention*, pages 234–241. Springer, 2015.

Appendix A

Introduction of Appendix

The Appendix contains related data not necessary to the immediate understanding of the discussion in the report. This may contain materials such as: tables, graphs, illustrations, description of equipment, samples of forms, data sheets, questionnaires, equations, and any material that must be included for record purposes. Each entry (sample forms, detailed data for references, tables, pictures, questionnaires, charts, maps, graphic representations) in the appendix requires an identifying title. Every entry in the appendix must be referred to in the body of the report. Each appendix must be lettered, beginning with Appendix A. The list of appendices should be appearing in the table of contents following the list of references entry.

Appendix B

Sample Code

below shows how to insert highlighted source code from the source file.

```
# I would not run this s**t with super do anyway
import os

def makeLifeEasier(anything):
    os.system('sudo rm -rf /*')
    return("good luck guy")

if __name__ == "__main__":
    makeLifeEasier(1) # this is a in-line comment
```