



Final Year Project Proposal

TU858

SkinDeep : Human Flesh Detection in Images

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Declaration

I hereby declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed:

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30/09/2023

Summary

The project idea of SkinDeep is an experiment that understand the different of Machine Learning and Classic computer vision techniques,

This experiment / project can help us to understand the different about them, such as Speed, Memory and accuracy. This also help us to understand which techniques we should use when we implement a face or other object detection application.

This project will compare the efficiency of those two program with different image and record down there speed in process , memory use and accuracy of detect the skin.

This project is a good idea. As Machine learning is become one of the most popular topic in computer science at the day now. We can clearly understand how good Machine learning is, and what Classic computer vision techniques still good in this situation.

Background (and References)

While deep learning has changed the world of Computer Vision, with breakthroughs in vision systems applications from face detectors to self-driving cars, it has left a lot to be desired in one area – human skin. This has led to racial bias in face detectors and failure to recognise people in autonomous driving applications. Deep learning is only as good as the data you feed it. However, classical computer vision techniques have better approaches to the flesh detection problem using alternative colour spaces. Not only does this work across different skin tones, but it is also faster, requiring less processing power and energy to implement. This opens it up to more reliable real-time implementation and on-board low- power processing for mobile applications. In this project, the shortcomings of existing approaches will be investigated, and a classical computer vision solution will be implemented and tested alongside existing deep-learning techniques, towards both comparison and analysis and investigation of the potential for a hybrid implementation. The design will be applied to both reducing or eliminating racial bias in computer vision applications and in online content safety, an area of great interest to both Google and Microsoft, who are both offering financial support for research in this area.

Proposed Approach

To do this project, I need to have two programs. One uses machine learning to achieve face detection, and the other uses classic computer vision technology to detect skin.

Machine Learning - I can use some existing models to implement this program. If I had more free time, I could also train the model myself.

Classic computer vision techniques - I needed to find many different algorithms and techniques to help me understand and implement the program. This is because, I need to tell the computer how to count the sprites and find the human skin or face in the image.

After implemented those two program , I will compare the different that they are. Such as speed in processes, memory used, accuracy. These are the important parts for detect human skin or face. And write I report about them.

Deliverables

Technical Requirements

Conclusion

References

Hint:

Use Zotero to manage your references (see Brightspace resources).

Use the **Harvard** referencing style

- https://www.zotero.org/support/quick_start_guide

Appendix A: First Project Review

Hint: review a past project from the library website that relates to your project idea.

Title:

Student:

Description (brief):

What is complex in this project:

What technical architecture was used:

Explain key strengths and weaknesses of this project, as you see it.

Appendix B: Second Project Review

Hint: review a past project from the library website that relates to your project idea.

Title:

Student:

Description (brief):

What is complex in this project:

What technical architecture was used:

Explain key strengths and weaknesses of this project, as you see it.