

Restoring the Past

Interim Report

DT 282

BSc in Computer Science (International)

**Chung Ho Lung**

**C20348256**

**Jack O Neil**

School of Computer Science

Technological University, Dublin

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Abstract

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:

Chung Ho Lung\_\_\_\_

Chung Ho Lung

08/11/2023

Acknowledgements

Body text

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# 1. Introduction

**As least 2 pages, but as many as you like**

## Project Background

While valiant efforts have been made to painstakingly, manually restore old films to their former glory by enthusiasts, this process is slow and makes for little headway into the preservation of the vast archives of decaying films. Even a single minute of film contains over 1000 individual frames and each frame must be manually processed. Technology has since advanced to a point that much of this time-consuming but important work can be automated. The expertise for automating this process can be found in the area of Computer Vision and Image Processing. The extent to which this processing can be automated, depends on the intelligence of the algorithm used. However, even just semi-automation could speed up the process considerably and allow for the rescue of whole archives of otherwise lost gems. In this project, a post-processing algorithm will be designed to tackle the main effects of film damage, towards automating / semi-automating the restoration process

## Project Description

This project is going to make an application that is using to restoring damaged images. Many different types of damaged on the images. I will focus on 5 main types of the damaged (Fading, Scuffs, Tears and Rips, Stains and spots, water and mold) and going to restore those images with different algorithm and function.

Images are proof of people’s past and their lives in the present. It recorded every bit of people’s live. People can use Image to recall the joys and sorrows in life. Unfortunately, even Images that can store the ‘time’ are inevitably subject to the wear and tear of time.

## Project Aims and Objectives

First, I need to understand the main types of damaged image. This allow me able to focus on the function/algorithm is required in this project.

Second, find at least one of the algorithms able to solve one of the damaged. Which allow me to proof this project is a doable project,

Third, I need to understand which backend I will be using in this project. It is because I will use Python Opencv for the functionality.

I need to understand which Python backend is good to implement this project.

Fourth, make a wireframe and set up the frontend. This will be help me to understand what the UI is will be and how many button(function) will need to be

Fifth, set up the backend and implement at least one main functionality that able to restore the image and output the result.

Sixth, add in other functionality. This project should be able to restore those main damaged images that I found.

## Project Scope

This project only focuses on using traditional image processing to restore the image. Machine learning will not be the main concept in this project.

Second , this project focus on how to success the functionality . Which there only have the minimum UI and UX in this application.

## Thesis Roadmap

# Literature Review

## 2.1. Introduction

This chapter I will talk about what kind of the programme language and backend able to success this functionality and why I pick the language and why not other.

## 2.2. Alternative Existing Solutions to Your Problem

C++ or Python 🡺 Opencv

Opencv is an open-source computer vision and machine learning software library. It provides a wide range of tools and algorithms for image and video analysis, including image processing, object detection, feature extraction, machine learning, and computer vision applications.

Java 🡺 JavaCV

JavaCV is a Java wrapper for the popular computer vision library, OpenCV. It provides Java interfaces to OpenCV functions, allowing Java developers to leverage the extensive capabilities of OpenCV for image and video processing.

I am going to use Python to develop my project. The reason that I will use Python is because Python have the lowest complexity to learn compare other two languages. Although Python have use more resources compared to other languages. However, we not need to worry that too much. This is because Opencv is written by C/C++ which mean the calculation part will not affected. This allow me can set up and develop more easy compare other languages.

## 2.3. Technologies you’ve researched

In this project I will develop a Web Based Application. As the reasons I required a backend to success all of these image processing functions. In chapter 2.2, I will use python to develop my project .

Flask and Django and the best backend that I can use . As they are Python backend

* Flask is a micro web framework written in Python. It is lightweight and designed to be simple and easy to use, making it a popular choice for building web applications and APIs.
* Django is a high-level web framework written in Python that encourages rapid development and clean, pragmatic design. It follows the Model-View-Controller (MVC) architectural pattern, but in the Django world, this is referred to as the Model-View-Template (MVT) pattern.

As my project is a Web Based Application. There will not have many page which mean I not need Django to success my project and Flask is the best option for me.

## 2.4. Other Research you’ve done

Domain specific research

## 2.5. Existing Final Year Projects

## 2.6. Conclusions

# 3. System Design

## 3.1. Introduction

## 3.2. Software Methodology

## 3.3. Overview of System

## 3.X. Other Sections

## 3.X. Conclusions

# 4. Testing and Evaluation

## 4.1. Introduction

## 4.2. Plan for Testing

## 4.3. Plan for Evaluation

## 4.4. Conclusions

# 5. Prototype Development

**As least 2 pages, but as many as you like (but lots of code samples).**

## 5.1. Introduction

## 5.2. Prototype Development

## 5.3. Other Sections

## 5.4. Conclusions

# 6. Issues and Future Work

## 6.1. Introduction

## 6.2. Issues and Risks

## 6.3. Plans and Future Work

### 6.3.1. GANTT Chart

# Bibliography