Final Year Thesis/Project Report Template

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A thesis submitted to the Department of Computer Science and Engineering
in partial fulfillment of the requirements for the degree of
B.Sc. in Computer Science and Engineering

Department of Computer Science and Engineering
Brac University
Month Year.

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Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. We have acknowledged all main sources of help.

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Approval

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Ethics Statement (Optional)

This is optional, if you don't have an ethics statement then omit this page

Abstract

Keywords:

Dedication (Optional)

A dedication is the expression of friendly connection or thanks by the author towards another person. It can occupy one or multiple lines depending on its importance. You can remove this page if you want.

Acknowledgement

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Chapter 1

Introduction

1.1 Background

Review of literature and background study

[**In case of internship - Company Background**] Describe the company where you completed your internship. Include information such as the company's history, mission, vision, key products or services, and its position in the industry. Highlight any relevant details that provide context for the project or tasks you worked on.

1.2 Rational of the Study or Motivation

This section discusses the significance and relevance of the research gap and its impact.

1.3 Problem Statement

The problem statement should clearly define the specific issue your research addresses.

[**In case of internship**] Introduce the Product

1.4 Objective

The ultimate goal of the research is to design and realize a multi-stage, multi-faceted deep learning system that has been specifically designed to achieve the goal of detecting and recognizing the Bangla license plates in extreme motion blurs and geometric distortion scenarios. This research concentrates on addressing the major performance reduction that current Automatic License Plate Recognition (ALPR) systems have experienced addressing the issue of high-speed vehicle use in unconstrained conditions. The study will also use the state-of-the-art YOLOv8 architecture to achieve high plate localization to make sure that the study has high sensitivity of detection in the complex urban backgrounds. One of the main goals of this study is to introduce DeblurGANv2 as a specially designed image denoising

assistant, which is expected to reinstitute high-frequency texture detail in the image of a license plate lost in the motion to reduce the loss of character-level fidelity that often initiates the occurrence of a false segmentation. Moreover, the study aims to create and implement a dedicated Optical Character Recognition (OCR) which is specifically trained on the complex Bengali script, solving the particular issues of the Matra relations and non-Latin character structure that are not solved by the conventional models. The final aim of this study is such that it will deliver an integrated and strong pipeline which will greatly improve recognition accuracy and operational stability in the real world systems like highway surveillance and criminal investigations. This study has the potential to supply a scalable and efficient solution to close the technical divide between existing restoration methods and the local script needs of Bangladesh to both enhance intelligent transportation systems and the effectiveness of law enforcement efforts in this country.

1.5 Methodology in Brief

This section provides a concise overview of how the study was conducted. State the research approach, data collection, analysis, etc.

1.6 Scopes and Challenges

Briefly outline the boundaries of your study and any constraints.

1.7 Team Overview

[In case of internship]
Write about your group and your role in that team.

1.8 Key Learnings and Insights

[In case of internship]
This section can be used to introduce the team members involved in the internship project, highlighting their roles, contributions, and any collaborative efforts. It provides context on the team dynamics and how each member contributed to the overall success of the project.

Chapter 2

Literature Review

2.1 Preliminaries

This section provides essential background information that readers need to understand your study. You can include information about theories, definitions, concepts, models, etc.

2.2 Review of Existing Research

Perform a literature survey and find relevant materials and information.

2.3 Summary of Key Findings

Discuss key results, patterns or trends, and implications.

Chapter 3

Requirements, Impacts and Constraints

3.1 Final Specifications and Requirements

This section discusses technical or methodological Requirements, data or resource requirements (software), etc.

3.2 Societal Impact

Study and report on project impact on society, health, safety, legal, and cultural aspects.

3.3 Environmental Impact

Study and report on project sustainability and environmental impact.

3.4 Ethical Issues

Identify ethical issues and professional responsibilities related to the design solution.

3.5 Standards - if applicable

Write about any standard maintained.

3.6 Project Management Plan

Prepare a project management plan including schedule, budget, and resource management.

3.7 Risk Management

Identify project risks and mitigation strategies.

3.8 Economic Analysis

Conduct economic analysis and cost-benefit estimation.

Chapter 4

Proposed Methodology

4.1 Design Process or Methodology Overview

Prepare design process based on objectives and constraints.

4.2 Preliminary Design or Design (Model) Specification

Present multiple alternative solutions and perform simulations for verification.

4.3 Data Collection -(If Applicable)

Sources of data and methods of collection.

4.3.1 Data Cleaning

Techniques used to handle missing values, outliers, and inconsistencies.

4.3.2 Data Transformation

Methods of normalizing, scaling, or encoding data.

4.3.3 Data Integration

Combining data from different sources if applicable.

4.3.4 Data Reduction

Techniques for reducing dimensionality or selecting relevant features.

4.3.5 Summary of Preprocessed Data

Description of the final dataset used for analysis and design.

4.4 Implementation of Selected Design

Describe the implementation process.

Chapter 5

Result Analysis

5.1 Performance Evaluation

This section discusses **evaluation criteria:** key metrics or criteria -accuracy, efficiency, reliability, **Testing Methods**

5.2 Analysis of Design Solutions

Description of solutions, evaluation criteria - accuracy, efficiency, feasibility, cost, performance, strengths and weaknesses.

5.3 Final Design Adjustments

Make necessary adjustments to the design based on performance evaluation.

5.4 Statistical Analysis

Mention the specific statistical tests or techniques applied

5.5 Comparisons and Relationships

In this section, compare different approaches, compare with existing works, solutions, or results, and analyze their relative effectiveness.

5.6 Discussions

Write about the interpretation, implications, and limitations of the results.

Chapter 6

Conclusion

6.1 Summary of Findings

6.2 Contributions to the Field

6.3 Recommendations for Future Work