Report Template: Machine Learning Model Training & Deployment

Cover Page

Course Name

Project Title

Group Number

Student Names & IDs

Semester / Academic Year

1. Introduction

Describe the problem addressed in this project (sentiment analysis or topic classification).

Explain the motivation for using machine learning and the goal of training, evaluating, and deploying a baseline model as a web application.

2. Dataset Description

2.1 Dataset Overview

– Dataset name

– Language

– Text type (reviews, social comments, news)

– Number of samples

– Label set

2.2 Dataset Characteristics

– Text length

– Presence of noise (typos, emojis, sarcasm)

– Easy/Hard split if applicable

3. Preprocessing

Describe preprocessing steps applied to the data.

Explain why minimal preprocessing was chosen and what was intentionally not done (e.g., not removing emojis or slang).

4. Model Architecture

4.1 Baseline Model

– TF–IDF (word–level)

– Logistic Regression

4.2 Training Procedure

– Train/test split

– Random seed

– Libraries used

5. Evaluation

5.1 Metrics

– Accuracy

– Macro–F1

– Confusion Matrix

5.2 Results

Summarize model performance and key observations.

6. Error Analysis

6.1 Error Categories

– Typos / Noise

– Mixed signals

– Negation / Sarcasm

– Domain shift

6.2 Error Examples

Provide 5–10 misclassified examples with explanations.

7. Deployment

7.1 System Architecture

– Model

– Backend API

– Web UI

7.2 Web Application Features

– Input and prediction

– Label and confidence

– Model version and latency

– Example inputs and screenshots

8. Discussion

Discuss strengths and weaknesses of the model.

Analyze the impact of noisy or hard data on performance.

9. Conclusion

Summarize what was learned from the project and key takeaways.

Appendix (Optional)

Additional details such as code snippets, API specifications, or extra experiments.