Low Level Design (LLD)

Facebook Post Status Prediction

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Document Control

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Version	Date	Author	Author
0.1	09/09/2022	Diana Laveena DSouza	Introduction & Architecture Defined

Reviews:

Version	Date	Reviewer	Comments
0.1	09/09/2022		Document Content, Version Control and Unit Test Cases to be added

Approval Status:

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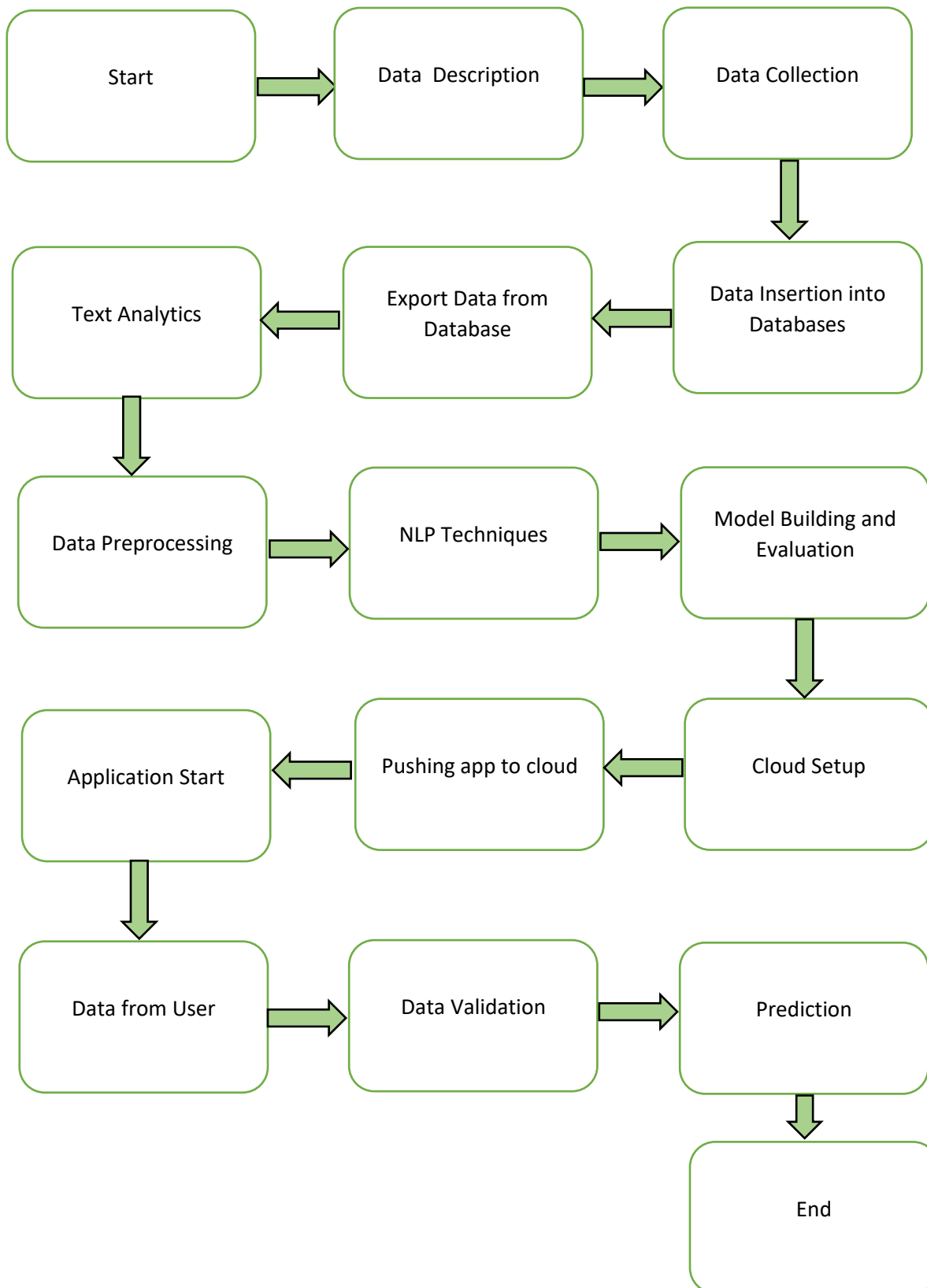# Contents

1   Introduction

1.1 Why is Low-Level Design Document?

The goal of LLD or a low-level design document (LLDD) is to give the internal logical design of the actual program code for Facebook Status Prediction. LLD describes the class diagrams with the methods and relations between classes and program specs. It describes the modules so the programmer can directly code the program from the document.

1.2 Scope

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. This process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

2 Architecture

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┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│    Start     │ ───> │Data Description│ ──> │Data Collection│
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                                                    │
                                                    v
┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│Text Analytics│ <─── │Export Data from│ <── │Data Insertion│
│              │      │   Database     │     │into Databases│
└──────────────┘      └──────────────┘      └──────────────┘
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┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│    Data      │ ───> │NLP Techniques│ ───> │Model Building│
│Preprocessing │      │              │      │and Evaluation│
└──────────────┘      └──────────────┘      └──────────────┘
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┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│ Application  │ <─── │Pushing app to│ <─── │ Cloud Setup  │
│    Start     │      │    cloud     │      │              │
└──────────────┘      └──────────────┘      └──────────────┘
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┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│Data from User│ ───> │Data Validation│ ──> │  Prediction  │
└──────────────┘      └──────────────┘      └──────────────┘
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                                             │     End      │
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3 Architecture Description

3.1 Data Description

Context: Collection of posts and their emotions helps greatly in NLP Classification tasks

Content: List of posts with emotion flag; Dataset is split into train & validation for building the machine learning model.

3.2 Data Collection

Data Collected from the Kaggle dataset.

3.3 Data Insertion into Databases

- Database creation and connection – Create a Cassandra database with a namespace key.
- Table creation in the database.
- Insertion of files in the table.

3.4 Export Data from Database

Data Export from Database – The data in a stored database is exported as a CSV file to be used for Text Pre-processing and Model Training.

3.5 EDA Analysis

Performing Data Visualization of the targeted variable.

3.6 Data Preprocessing

Data Preprocessing steps, we could use stop word removal, punctuation removal, tokenization, lemmatizing, doc2vec, Label Encoder, Oversampling techniques etc.

3.7 Model Building and Evaluation

We will find the best model to identify the emotional quotient of the person. Here algorithms will be passed with the best parameters. We will calculate the Recall, Precision and F1 scores for models and select the model with the best score.

3.8 Data from User

Here we will collect Facebook status data from users.

3.9 Data Validation

Here Data Validation will be done, given by the user.

3.10 Prediction

The model will predict the emotional quotient of the person.

3.11 Deployment

We will be deploying the model to GCP.

This is a workflow diagram for the Facebook Status Prediction.

4 Unit Test Cases

Test Case Description	Pre-Requisite	Expected Result
Verify whether the Application URL is accessible to the user	1. Application URL should be defined	The application URL should be accessible to the user.
Verify whether the Application loads entirely for the user when the URL is accessed	1. Application URL is accessible 2. Application is deployed	The Application should load entirely for the user when the URL is accessed.
Verify whether the user can input the text in all input fields	1. Application is accessible	The user should be able to input the text in all input fields.
Verify whether the user gets Submit button to submit the inputs.		The user should get Submit button to submit the inputs.
Verify whether the user is presented with results on clicking submit.		The user should be presented with results on clicking submit