LOW-LEVEL DESIGN

# Concrete Strength Prediction

BY – Balamurali K

# Document Version Control

|  |  |  |  |
| --- | --- | --- | --- |
| **Date Issued** | **Version** | **Description** | **Author** |
| **01.09.2022** | V1.0 | Initial LLD- V1.0 | Balamurali K |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Contents

[Document Version Control 1](#_bookmark0)

* 1. [Introduction 3](#_bookmark1)
  2. [What is Low-Level Design Document? 3](#_bookmark2)
  3. [Scope 3](#_bookmark3)

[2.0 Architecture 4](#_bookmark4)

* 1. [Architecture Description 5](#_bookmark5)
  2. [Data Description 5](#_bookmark6)
  3. [Exploratory Data Analysis 5](#_bookmark7)
  4. [Data Pre-processing 5](#_bookmark8)
  5. [Model Building 5](#_bookmark9)
  6. [Data Validation 6](#_bookmark10)
  7. [Deployment 6](#_bookmark11)

[4.0 Unit Test Cases 7](#_bookmark12)

# Introduction

## What is Low-Level Design Document?

The goal of LLD or Low-Level design document (LLDD) is to give the internal logical design of the actual program code. Low-Level design is created based on the High-Level design. LLD describes the class diagrams with the methods and relations between classes and program specs. It describes the modules so that the programmer can directly can directly code the program from the document.

## 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.

# 2.0 Architecture

Start

Model

ilding

Model

Testing

Data

Fetching

Feature

Engineering

Flask Setup

EDA

Data

Cleaning

Deployment

Bu

# Architecture Description

## Data Description

The primary source of data for this project from Kaggle. The dataset is comprised of 1005 records with 10 attributes. The data is in structured format and stored in a CSV file.

## Exploratory Data Analysis

Exploring the data by visualizing the distribution of values in some columns of the dataset, and the relationships between concrete strength and other columns. Visualizing the distribution of cement, fly ash, blast furnace slag, coarse aggregate, fine aggregate, water, super plasticizer, age and concrete comppressive strength . Also checking the region wise have any differences in the expenses.

## Data Pre-processing

If data is not suited to take place directly for the regression. Then, cleaning of dataset becomes important for using the data under various regression algorithms.

## Model Building

After data pre-processing is done, we will split the dataset into training set and test set. Then we will use training set for building the best model. The model will be trained on several algorithms. We will

calculate RMSE and r2 score for each model and select the model with the best score.

## Data Validation

Here Data testing will be done on the test set.

## Deployment

We will be deploying the model to Heroku platform.



# 4.0 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 | Application URL should be accessible to the user |
| Verify whether the application loads completely for the user when the URL is accessed | 1. Application URL is   accessible   1. Application URL is   deployed | Application URL should load completely for the user when URL is accessed |
| Verify whether user can see input field after opening URL | 1. Application is accessible | User should be able to see input fields after opening URL |
| Verify whether user can edit all the input fields | 1. Application is accessible | User should be able to edit all the input fields |
| Verify whether user has options to filter the inputs fields | 1. Application is accessible | User should filter the options of input fields |
| Verify whether user gets submit button to submit the inputs | 1. Application is accessible | User should get submit button to submit the inputs |
| Verify whether user can see the  output after submitting the inputs | 1. Application is accessible | User should get outputs after submitting the inputs |
|  |  |  |