**PRCP-1019-ConcreteStren**

**Problem Statement**

Task 1:- Prepare a complete data analysis report on the concrete data.

Task 2:- Create a machine learning model which can predict the future strength of a concrete mix, based on its constituents’ composition and also the age of the mix.

**Dataset Description and Link:**

Concrete as a building block of most construction is the most important material in civil engineering. The concrete compressive strength is a highly nonlinear function of age and ingredients. These ingredients include cement, blast furnace slag, fly ash, water, superplasticizer, coarse aggregate, and fine aggregate.

The actual concrete compressive strength (MPa) for a given mixture under a specific age (days) was determined from the laboratory. Data is in raw form (not scaled).The data has 8 quantitative input variables, and 1 quantitative output variable, and 1030 instances (observations).

Link : <https://d3ilbtxij3aepc.cloudfront.net/projects/CDS-Capstone-Projects/PRCP-1019-ConcreteStren.zip>

**Attribute Information:**

Given are the variable name, variable type, the measurement unit and a brief description. The concrete compressive strength determination is the objective of the regression task. The order of this listing corresponds to the order of numerals along the rows of the database.

Name -- Data Type -- Measurement -- Description

Cement (component 1) -- quantitative -- kg in a m3 mixture -- Input Variable

Blast Furnace Slag (component 2) -- quantitative -- kg in a m3 mixture -- Input Variable

Fly Ash (component 3) -- quantitative -- kg in a m3 mixture -- Input Variable

Water (component 4) -- quantitative -- kg in a m3 mixture -- Input Variable

Superplasticizer (component 5) -- quantitative -- kg in a m3 mixture -- Input Variable

Coarse Aggregate (component 6) -- quantitative -- kg in a m3 mixture -- Input Variable

Fine Aggregate (component 7) -- quantitative -- kg in a m3 mixture -- Input Variable

Age -- quantitative -- Day (1~365) -- Input Variable

Concrete compressive strength -- quantitative -- MPa -- Output Variable

**Model Comparison Report**

Create a report stating the performance of multiple models on this data and suggest the best model for production.

**Report on Challenges faced**

Create a report which should include challenges you faced on data and what technique was used with proper reason.

**Note**:- All above tasks should be created on a single jupyter notebook and the same must be shared as part of the final submission of the project.