

# Predicting Life Expectancy using Machine Learning

Category: Machine Learning

## Project Scope Document

### **Problem Description :**

A typical Regression Machine Learning project leverages historical data to predict insights into the future. This problem statement is aimed at predicting Life Expectancy rate of a country given various features.

Life expectancy is a statistical measure of the average time a human being is expected to live, Life expectancy depends on various factors: Regional variations, Economic Circumstances, Sex Differences, Mental Illnesses, Physical Illnesses, Education, Year of their birth and other demographic factors. This problem statement provides a way to predict average life expectancy of people living in a country when various factors such as year, GDP, education, alcohol intake of people in the country, expenditure on healthcare system and some specific disease related deaths that happened in the country are given.

### **Project Summary :**

This Project will give overall prediction about the life expectancy of people living in various countries who have various diseases like Diptheria, HIV, Hepatites, Polio, Measles and also people taking alcohol based on Body Mass Index(BMI), GDP, Population, Mortality Rate of a particular country.

### **Project Requirements:**

- Knowledge of Machine Learning Algorithm such as: Regression, Random Forest etc. which gives better accuracy and less loss.
- Knowledge of Various Libraries Like Panda, Numpy, sklearn, matplotlib, Numpy , Seaborn , scipy to train, test and plot the data.
- Knowledge of IBM Services.
- Knowledge about Watson Studio and Node-Red.
- Some Knowledge of math and statistics

### **Functional Requirement:**

- A good data-set to be used so that our model trains without any overfitting or underfitting and also data should be balanced.
- Algorithms to predict life expectancy rate of a country.
- Node Red- Application to show the flow of project and to creat web page.

**Technical Requirements:**

- Familiar with the implementation of Machine Learning Algorithms.
- Can use Watson studio with Jupyter notebook and import python libraries and helper functions.
- Knowledge of Python programming language,
- Can perform operations of dataframe such as checking missing data, normalizing data, filling null values.
- Can visualise given data with graphs and charts.
- Create Training and Test Sets.
- Extract just the numeric values for the features and labels.
- Create a model then train it and test it.
- Ability to work with the api, token and sensitive credentials.

**Software Requirements:**

- IBM Cloud.
- IBM Watson Studio and its Machine Learning Service.
- Node-Red Application.

**Project Deliverable:**

A machine learning model which predicts life expectancy based on the input provided by user, and it will be out of scope for user to modify or to increase the accuracy/predicted output of the ML model.

**Front-end:** A web page taking the necessary inputs from the user to implement the designed model.

**Back-end:** User given input gets processed according to the trained Model and finally gives the desired output of life expectancy.

**Project Team:**

Individual

**Project Schedule:**

29 days.