

**PREDICTING AVERAGE LIFE EXPECTANCY**

**PROJECT REPORT**

**PROJECT SCOPE DOCUMENT**

**1. Project Summary:**

- Forming a regression model while considering data from a period of 2000 to 2015 as provided by the World Health Organization (WHO), to predict the life expectancy of countries.
- It is a typical Regression Machine Learning project which is aimed at predicting average Life Expectancy rate of various countries taking in account several features which serve as a historical data such as 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.

**2. Project Requirements:**

- a. Datasheet comprising of countries and factors influencing life expectancy.
- b. An appropriate machine learning model. Here multivariate linear regression model is used as it incorporates various features and the predictions are the continuous values.

- c. Programming language such as python.
- d. An appropriate computing platform such as IBMcloud.
- e. Moreover some important Libraries such as Pandas, Numpy, SciKit-Learn, Seaborn, Matplotlib.
- f. A tool to generate URL for the model to be accessible globally.
- g. Knowledge of tools like IBM Watson and Node-Red

### **3. Functional Requirements:**

- a. At the front-end, a webpage taking the necessary inputs from the user to implement the designed model.
- b. At the back-end, the input gets processed and finally gives the desired output, here the average life expectancy.
- c. some Knowledge of mathematics and statistics
- d. Machine Learning model based on regression
- e. Node-Red application to show the flow of project.
- f. IBM Watson Studio and Jupyter Notebook.

### **4. Technical Requirements:**

- a. Performance of the system may vary for various inputs, since the model is designed based on a typical dataset.
- b. Accuracy of the system is not 100%, but gives a fair output which is reliable.
- c. It is accessible globally, but however its performance may get affected while handling a myriad of requests concurrently.
- d. Jupyter notebook for developing python codes.
- e. GIT
- f. IBM cloud
- g. IBM Watson Studio
- h. Node-Red flow application

### **5. System Requirements:**

- i. It can run on any operating system. eg iOS/windows.
- j. It requires certain memory to hold data.
- k. Requires internet connection.
- l. Requires an efficient CPU power to improvespeed.

## 6. Project Deliverables:

This project delivers the predicted average life expectancy based on the input provided.

## 7. Project Team:

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A Computer science sophomore at Delhi Technological University, New Delhi.

## 8. Project Schedule:

Task(dd/mm)	15/5-16/5	17/5-18/5	19/5-21/5	22/5-26/6	27/6-30/6	31/6-2/6
Project planning & kickoff	DONE					
Explore IBM Cloud platform		DONE				
Explore IBM Watson services			DONE			
Introduction to Watson studio				DONE		
Predicting life expectancywith Python					DONE	
Predicting life expectancy without python						DONE

## 9. Project Scope:

- Life expectancy is one of the most important factors in end-of-life decision making. Good prognostication for example helps to determine the course of treatment and helps to anticipate the procurement of health care services and facilities, or more broadly: facilitates Advance Care Planning. Advance Care Planning improves the quality of the final phase of life by stimulating doctors to explore the preferences for end-of-life care with their patients, and people close to the patients. Physicians, however, tend to overestimate life expectancy, and miss the window of opportunity to initiate Advance Care Planning. Machine learning and natural language processing techniques offer a feasible and promising approach to predicting life expectancy. The research has potential for real-life applications, as in supporting timely recognition of the right moment to start Advance Care Planning.