PREDICTING LIFE EXPECTANCY USING MACHINE LEARNING

● 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 Scope, Schedule, Team & Deliverables:

1) Project Scope :

Good prognosis helps to determine the treatment course and helps predict the procurement of health care programs and equipment or promote Advance Care Planning more generally. So this problem statement is aimed at predicting Life Expectancy rate of a country given various features. It predicts the average lifetime of a human being and predicts on the basis of various factors like Regional variations, Economic Circumstances, Sex Differences, Mental Illnesses, Physical Illnesses, Education, Year of their birth and other demographic factors. So the end product will predict the future life expectancy of the person with the help of prior given appropriate matrix of features by the user like current 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.

2)Project Schedule:

week	task-1	task-2	task-3	task-4
week-1	Project Scope, Schedule, Team & Deliverables	Setup the Development Environment	Create IBM Cloud Account	Create a Node-RED Starter Application
week-2	Explore IBM Watson Usecases	Explore IBM Watson Machine Learning	Build your own ML model in IBM Watson Studio	Automate your ML model
week-3 (Predicting Life Expectancy with python)	Collect the Dataset for the Project	Create Necessary IBM Cloud Services	Build a Machine Learning model and create Endpoints for Node-RED integration	Build Node-RED Flow to Integrate ML Services
week-4 (Predicting Life Expectancy without python)	Collect the Dataset for the Project	Create Necessary IBM Cloud Services	Import dataset and create AUTO AI Experiment	Build Node-RED flow to integrate AutoAI

3) Project Summary:

- This project is to build a model while considering historical data from a period of 2000 to 2015 for all the countries.
- The model trained in this project will be able to predict the average lifetime of a human being given some input factors.
- With the help of this project any country can able to predict the expected lifetime of their countrymen and then accordingly take preventive measures to improve on their healthcare measures.
- This will also help countries in improving a particular a particular field such as GDP, alcohol intake etc which have a high impact on country's life expectancy.

4) Project Requirements:

- Download the data set of WHO
- Analyze it and clean the data set
- Create IBM account
- Create the appropriate cloud and node red services
- Train the regression model on different algorithms
- Check for the best one and finalize that algorithm to train our model
- Build Node red flow for GUI(web app)
- Create scoring end point for integrating our model to node red

5)Functional Requirements:

- Provide the model with the inputs fields
- The model will return the output as the average predicted lifespan

6)Technical Requirements:

- The GUI must be integrated with the backend trained model.
- The model before training must be given with clean data set (done by preprocessing)

7)Software Requirements:

- Python IDE
- Excel
- IBM Cloud Account
- IBM Watson
- Node Red

Dataset Reference: https://www.kaggle.com/kumarajarshi/life-expectancy-who

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