Predict Life Expectancy Using Machine Learning

Project Introduction

Life expectancy refers to the number of years a person is expected to live. In mathematical terms, life expectancy refers to the expected number of years remaining for an individual at any given age.

Based on actuarial science, the life expectancy for a particular person or a population group depends on several individual-level as well as population-level factors such as a person't lifestyle, historical mortality data of country, etc. However, as life expectancy is calculated based on averages, a person may live for many years more or less than expected.

To predict the life expectancy rate of a particular country, we will be using machine learning to draw inferences from the given dataset and give a prediction. We will also be creating a UI using Node-RED for making the model accesible to general users.

Project Requirements

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

Functional Requirements: A web interface for the user to interact with the ML model. Given a specific set of inputs by the user, the interface should display the predicted life expectancy received from the model.

Technical Requirements: Sound knowledge of python as well as machine learning algorithms. Ability to use IBM cloud and various services provided such as Node-RED. The developed model should be efficient and have a minimum of 75% accuracy. Project to be uploaded to assigned GitHub repository..

Software Requirements: Model to be deployed and highly available and accessible to the user from any browser- both PC and mobile based. Development to be done usig IBM cloud and its services. Project report to be written in Zoho writer.

Project Deliverables

- Project report in text format.
- Developed machine learning model using Linear Regression.
    - The model is developed in Python
    - First, the datset was explored
    - Second, all the anomalies such as null values, outliers, etc. were handled
    - Then the model was trained on this processed dataset
    - Finally the model was deployed using Node-RED
- Model deployed on Node-RED for the user to interact with.
    - Interactive UI
    - User will input values in the required input fields
    - These values will be automatically sent to the model in the back-end
    - The model in turn will return the predicted life expectancy
    - This prediction will be shown to the user as output
- Video walkthrough of the project.

Project Team

Amarjeet Singh

Project Schedule

Timespan: 1 month
Activities:

- ✓ Project Planning & Kickoff
  - ✓ Project Scope, Schedule, Team & Deliverables
  - ✓ Setup The Development Environment
- ✓ Explore IBM Account Cloud Platform
  - ✓ Create IBM Cloud Account
  - ✓ Create a Node-RED Starter Application
- ✓ Explore IBM Watson Services
  - ✓ Explore IBM Watson Usecases
  - ✓ Explore IBM Watson Machine Learning
- ✓ Introduction To Watson Studio
  - ✓ Build Your Own Model ML Model In IBM Watson Studio
- ✓ Predicting Life Expectancy With Python
  - ✓ Collect The Dataset For The Project
  - ✓ Create Necessary IBM Cloud Services
  - ✓ Create A Watson Studio Project
  - ✓ Configure Watson Studio
  - ✓ Create Machine Learning Service
  - ✓ Create A Jupyter Notebook In IBM Watson And Import Data
  - ✓ Build A Machine Learning Model And Create Endpoints For Node-RED Integration
  - ✓ Build Node-RED Flow To Integrate ML Services