**An Internship Project Report**

**On**

**Predicting Life Expectance Using Machine Learning**

**Submitted by**

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**Project ID : SPS\_PRO\_215**

**STARTING DATE : 19/05/2020**

**1 INTRODUCTION**

* 1. **Overview**

A typical Regression Machine Learning project using historical data to predict the average time a human being is expected to live. This problem statement provides a way to predict average life expectancy of people living in a country when various features such as Regional variations, Economic Circumstances, Sex Differences, Mental Illnesses, Physical Illnesses, Education, Year of their birth, GDP, education, alcohol intake of people in the country, expenditure on healthcare system and some specific disease related deaths that happened in the country and other demographic factors are given.

**1.2 Purpose**

The main objective of the project is to predict the life expectancy in more accurate way then the previous methods.This project tests the potential of using machine learning and natural language processing techniques for predicting life expectancy from electronic medical records.

**2 LITERATURE SURVEY**

**2.1 Existing problem**

Life expectancy refers to the number of years a person is expected to live based on the statistical average of different factors. Life expectancy varies by birth year, geographical area , by era and many factors.

Life expectancy, estimate of the average number of additional years that a person of a given age can expect to live. The most common measure of life expectancy is life expectancy at birth. Life expectancy is a [hypothetical](https://www.merriam-webster.com/dictionary/hypothetical) measure. It assumes that the age-specific [death](https://www.britannica.com/science/death) rates for the year will apply throughout the lifetime of individuals born in that year. The measure differs considerably by sex, age, race, and geographic location of the person. Therefore, life expectancy is commonly given for specific categories.

There may be so many factors to estimate life of a person more accurately. Such as mental and physical illness, Education, other demographic factors data by the time of death which gives precise Life expectancy values.

**2.2 Proposed solution**

The main aim of project is to create a user interface which can be helpful for predicting life expectancy of particular country. Inorder to achieve that one we use IBM cloud platform services. IBM cloud platform services provides us to implement machine learning service associated with Watson studio. By using those services we create project in Watson studio. Where we can import our dataset as asset and add Auto AI services to project then we select the predicting column after that we can deploy our model.

Another main step in our project is to create user interface and associate it with deployed ML project which we create in Watson studio. To achieve that, we use Node-RED software in IBM platform. In Node-RED we use form node to create UI,function node for input, Ibm node to integrate ml service to UI, response for displaying predicted value.

By considering many factors Data such as Regional variation, Economic circumstances and GDP, Adult morality, Infant deaths, Diseases caused of the country we make this Machine Learning Model which leverges these historic data in predicting the insights into the future.

**3 THEORITICAL ANALYSIS**

**3.1 Block diagram**

Predicting Life expectancy Using ML

Build node-RED flow to Integrate Auto-AI model

Deploy And Test your Model

Add dataset to the Auto-AI experiment and run

Create a project in watson studio

Collect the Dataset

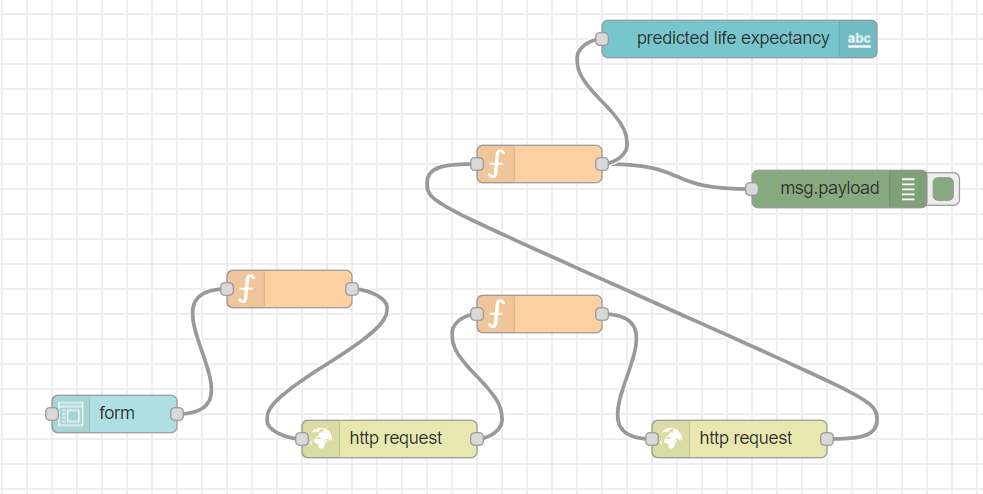
**3.2 Hardware / Software designing**

This project requires the following software and hardware :

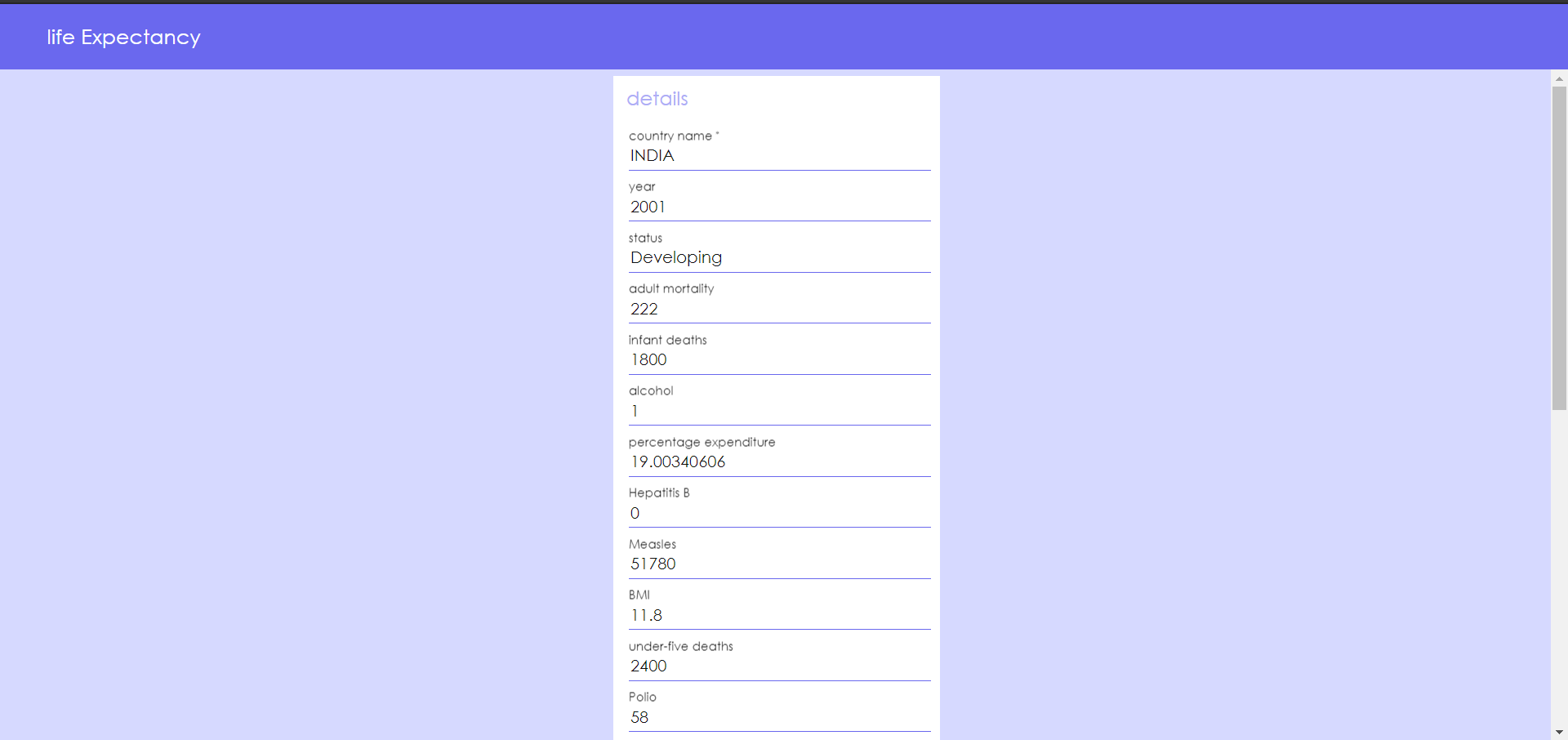
* Processor.
* IBM cloud account, Dataset, IBM watson service, Watson studio, Machine Learning service, Auto AI Experiment and Node-RED software.

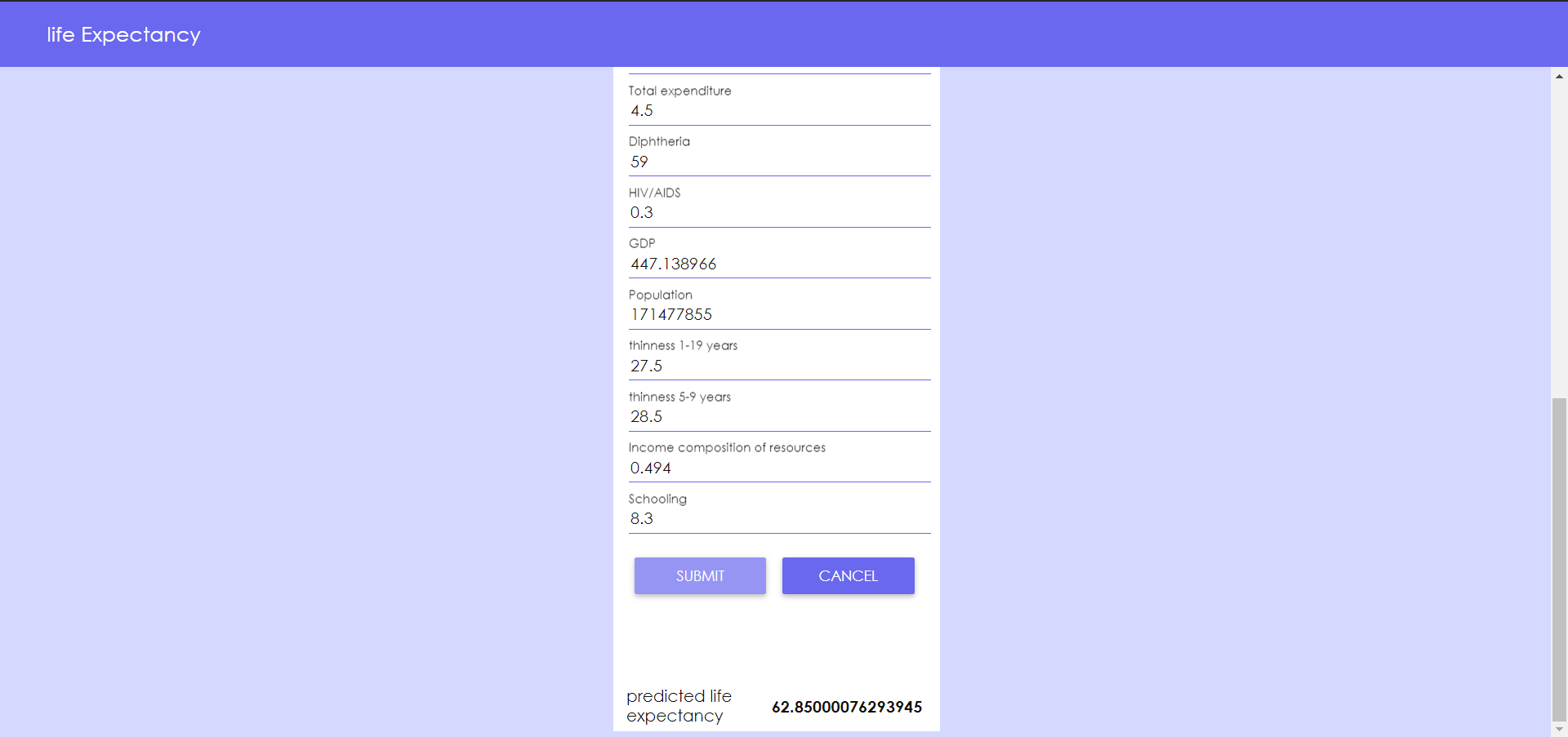
**4 EXPERIMENTAL INVESTIGATIONS**

**4.1 Node-RED flow**

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**4.2 Final UserInterface**

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**5 FLOWCHART**

START

ENTER VALUES

PREDICTING LIFE EXPECTANCY USING IBM AUTO AI SERVICE

DISPLAYS EXPECTED VALUES

STOP

**6 RESULT**

By giving the dataset to the Auto AI service Result is given according to the values given as input in the UserInterface. Which gives the predicted values.

**7 ADVANTAGES & DISADVANTAGES**

**7.1 ADVANTAGES**

Accuracy. Life expectancy using life insurance underwriting and life settlement methods is very accurate, which can affect millions of dollars in judgments or awards. This addresses the inadequacy of life expectancies that are simply taken from a life table, estimated by a doctor, actuary or statistician, or have been excluded. In many cases, such life expectancies are too short, too long and/or not credible.

 Provides a complete insight to the judge or jury of the individual's medical conditions and/or personal history of high-risk behaviors. A life expectancy using life insurance underwriting and life settlement methods provides a comprehensive profile of the individual's medical conditions as well as any risky behaviors. The judge or jury will be given a comprehensive view of the individual's personal health and lifestyle, which often decides the case.

**7.2 DISADVANTAGES**

The main disadvantage is that NO ONE can predict the future. No one knows when someone will die, who will get cancer or not, who will recover and who won't. A person who appears to have been sickly for many years can surprise everyone by outliving all of his peers. Likewise, a person known to be robustly healthy and in shape can succumb immediately to a stroke, heart attack, or other unexpected calamity.

If you use life expectancy, it doesn't mean that you or anyone else will live as long as the chart says they will. Even if their health, sex, age, race and medical condition are all the same as the charts, doesn't mean that they will live as long as the chart says. That is because life expectancy is an average life span of thousands of people. That means that some of them died much earlier, and some died much later than the expected average life span.

**8 APPLICATIONS**

It helps to determine the course of treatment and helps to anticipate the procurement of health care services and facilities, 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. This research tests the potential of using machine learning and natural language processing techniques for predicting life expectancy.

**9 CONCLUSION**

Finally we can conclude that this UserInterface ML model is more accurate than previous Life Expectancy Models present.

**10 FUTURE SCOPE**

Future studies should attempt to make the effects of lifestyle and health-care factors on regional mortality differences more explicitly, as they are more proximate determinants than socioeconomic factors. From a theoretical point of view, more meaningful indicators reflecting the quality and accessibility of health care at the contextual levels should be developed in order to identify deficiencies in the health care system.

At the individual level, the fact that the privately insured live longer than those in compulsory health insurance, independent of their socioeconomic status, is striking. This raises the question of whether prevention and medical care are better for those who are privately insured or whether there are distinct selection effects into private health.

**11 BIBILOGRAPHY**

**APPENDIX**

1. **Source Code**

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