Project Report

One year life expectancy post Thoracic surgery using IBM Watson

RSIP Career Basic ML 078

By

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Project Details :

Project ID : SPS_PRO_304

Project Title : One Year Life expectancy post Thoracic surgery using IBM Watson

Duration : 4 Weeks

Project Support : SmartBridge Educational Services

Project Mentor : Mr. Rammohan Bethi

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ACKNOWLEDGEMENT

This project has taken a considerable amount of time and resources. I would like to acknowledge the help of all of those who have made this project possible. In finical I would like to thank my supervisor Mr. Rammohan Bethi for his time, patience and guidance, and also for allowing the idea to be pursued primitively. I would also like to thank Mr. Vinay Kumar Nomula for his help. Further to these people I would like to thank the members of the Smartbridge career workshop for their technical help in setting up various codes and faults. Also, I would like to thank all of my co-interns who have worked on the Open Source projects without whose efforts this project would not have been possible.

INTRODUCTION

Overview

The Project “One year life expectancy post Thoracic surgery using Watson Auto AI” is to be able to predict the life expectancy of the patients within 1 year after undergoing thoracic surgery with accuracy.

The project is based on IBM provided features. IBM Watson for Oncology (WFO) is one of the leading representatives in artificial intelligence (AI) or cognitive technologies. It is a unique system, with an ability to acquire much of its knowledge by “reading” the literature, protocols, and patient charts, and learning from test cases and experts from Memorial Sloan Kettering Cancer Center (MSKCC).It can identify connections among all of the data to answer a complex medical question in a very short amount of time, resulting in evidence-based and personalized treatment options.

2. *LITERATURE SURVEY*

a.Existing problem

Lung cancer is the most common form of cancer world-wide, and the most common cause of cancer death. Radical surgical resection, with or without adjuvant treatment, is still a Prerequisite for cure. In spite of different additional modes of treatment, survival is still poor.It is important to have knowledge of peri- and postoperative mortality (life expectancy) and morbidity (health complications), and also of risk factors prior to surgery, to be able to improve the quality of operative procedures and identify patients running the highest risk.This helps to optimize the patient's condition, medication and respiratory status before surgery. Furthermore, the operative risks must be considered in relation to the long-term results in order to identify patients who will clearly benefit from surgery.

2.b. Proposed Solution

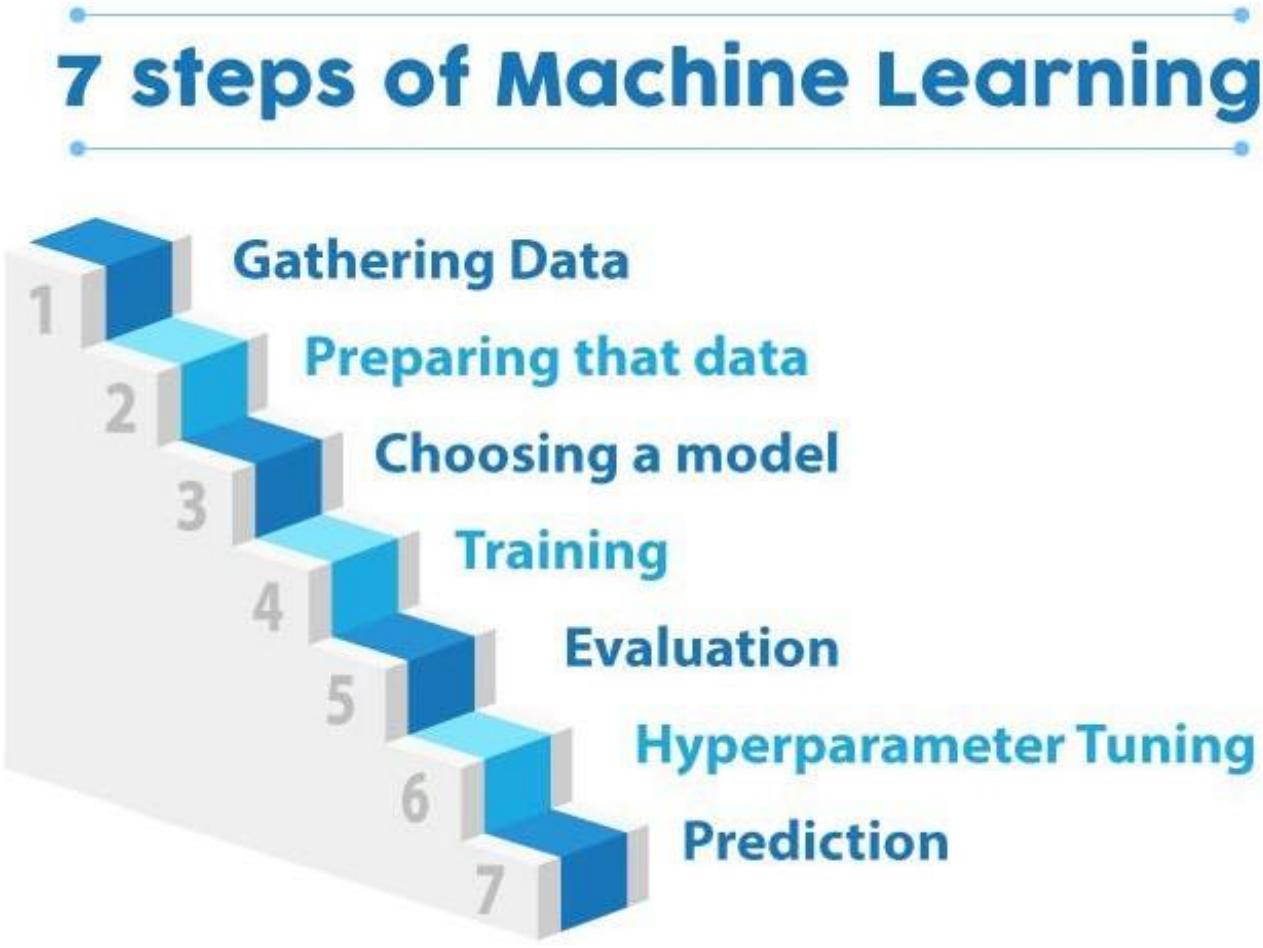
The aim of the project is to examine the operative mortality (life expectancy) and morbidity (Health issues) after lung cancer surgery and to identify factors associated with an adverse Outcome. IBM Watson AutoAI Machine Learning Service is developed to predict the post operative life expectancy of lung cancer patients using the computational methods. These methods were used specifically to predict whether a lung cancer patient will survive one year after he or she has had thoracic surgery.

The results of each of the techniques were then measured and compared based on accuracy and performance.. The model is deployed on IBM cloud to get scoring end point which can be used as API in mobile app or web app building. We are developing a web application which is built using node red service. We make use of the scoring end point to give user input values to the deployed model.

The model prediction is then showcased on User Interface.

3.THEORETICAL ANALYSIS

a.Block diagram



b.Hardware / Software designing

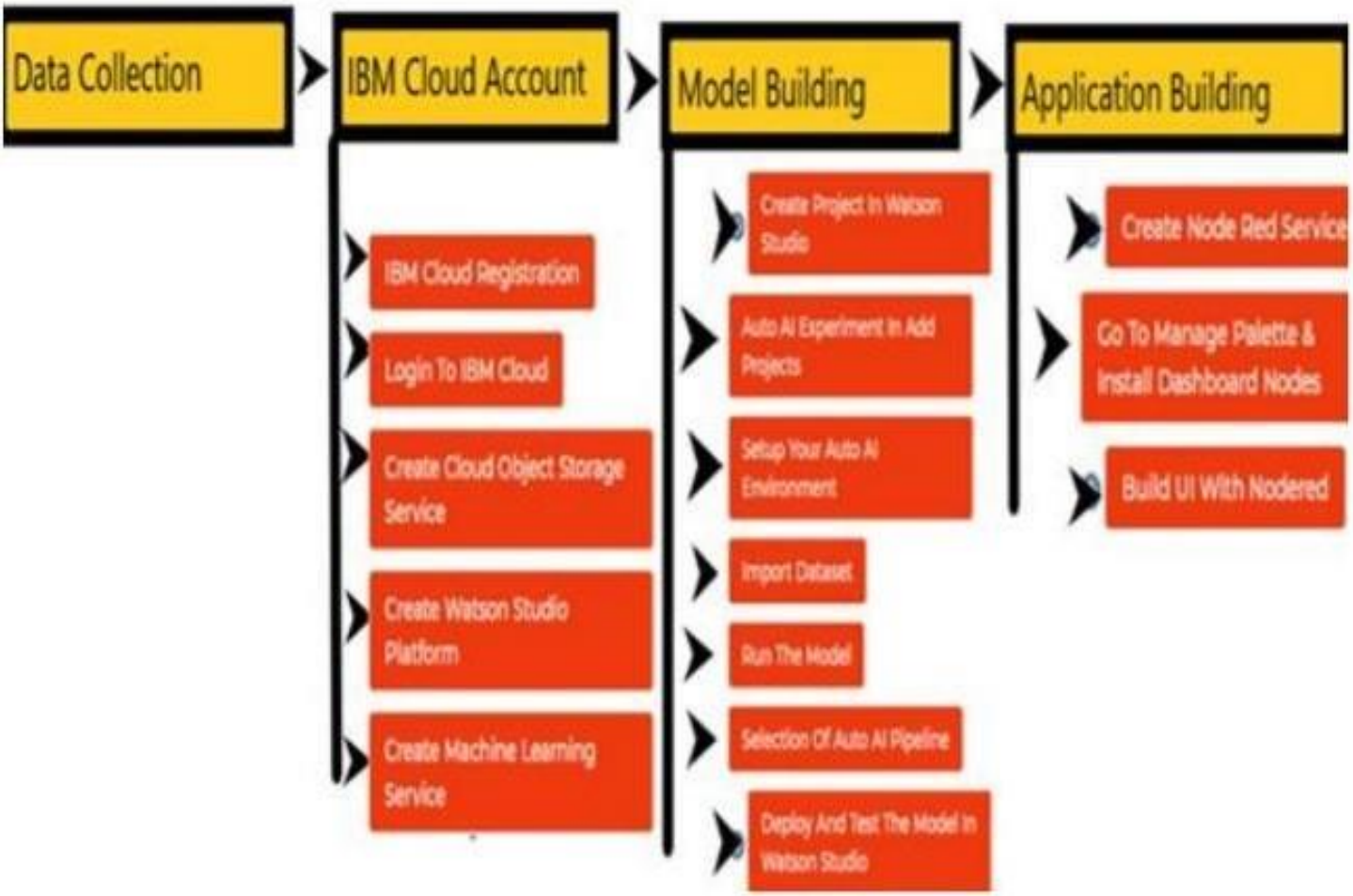
The project has been done by using IBM Cloud in which machine learning service, Watson studio and cloud storage service (to store the data) have been created by using the options available in Catalog.

4. EXPERIMENTAL INVESTIGATION

There are six steps in experimental investigation on of a general project:

1. Choose a Project Idea
2. Conduct Background Research
3. Compose a Hypothesis
4. Design your Experiment
5. Collect Data
6. Analyse Data and Draw Conclusions

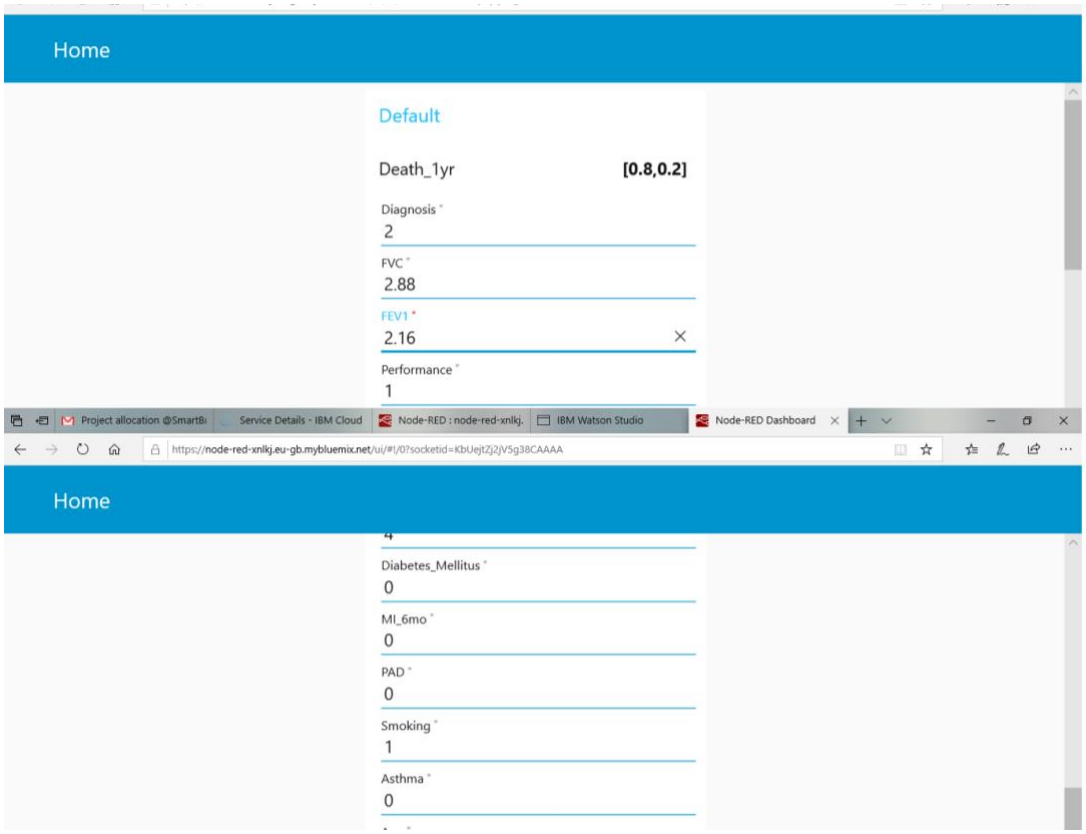
5. *FLOW CHART*


Data Collection
IBM Cloud Account
Model Building
Application Building
IBM Cloud Registration
Login To IBM Cloud
Create Cloud Object Storage Service
Create Watson Studio Platform
Create Machine Learning Service
Create Project In Watson Studio
Auto AI Experiment In Add Projects
Setup Your Auto AI Environment
Import Dataset
Run The Model
Selection Of Auto AI Pipeline
Deploy And Test The Model In Watson Studio
Create Node Red Service
Go To Manage Palette & Install Dashboard Nodes
Build UI With Nodered

6.RESULT

After the implimentation of the project the ui predicts the one year life expectancy of a patients undergoing post Thoracic surgery and the Node Red UI provide us simple way to get the result of Auto AI Experiment. The Node Red User Interface can be a web application help the people to be know the approximate predicted life expectancy.

Here is the Node Red UI which predicts classification



7.ADVANTAGES & DISADVANTAGES

The **advantages** are easy to implement, accessibility is fast, continuous Improvement, wide application, available 24x7, no human intervention needed. We can handle multi-dimensional and

multi-variety data.

Where as the **disadvantages** are lack of security, loss of control on data, high error susceptibility, dependence of network/providers.

8.APPLICATION

Using The Auto AI Experiment, one can build and deploy a machine learning model with sophisticated training features. In the given project we can predict the price of the required vehicle by giving few input parameters.

9.CONCLUSION

In this project by using IBM Cloud the model processing is been done in Auto AI services in IBM cloud and then the deployment is been done in Watson studio and application is build using Node red service which has been successful as we are able to get the desired output.

10.FUTURE SCOPE

As we are developing day to day there is a continuous growth of Auto AI and Machine Learning. The web application can be used to predict the cost of the health insurance accurately, precisely and efficiently instead of n number of people being involved directly or indirectly.

BIBLIOGRAPHY

The whole project uses different services which are listed below

- IBM Cloud

-Watson Studio Auto AI

- Node Red Application

-Cloud Storage Service

APPENDIX

A. Source Code

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