

PROJECT NAME :- Predicting Life Expectancy Using Machine Learning

DATE :- May 6, 2020

1.PROJECT TEAM :- Individual

2.PROJECT SCHEDULE :- From the day of starting it must be completed in 28 days.

3.PROJECT SCOPE :- The scope of the project is to help medical fraternities in predicting the death's age and drastic change in death rates of a country using machine learning.

4.PROJECT REQUIREMENTS :- Projects needs to be done in 28 days , individual project.

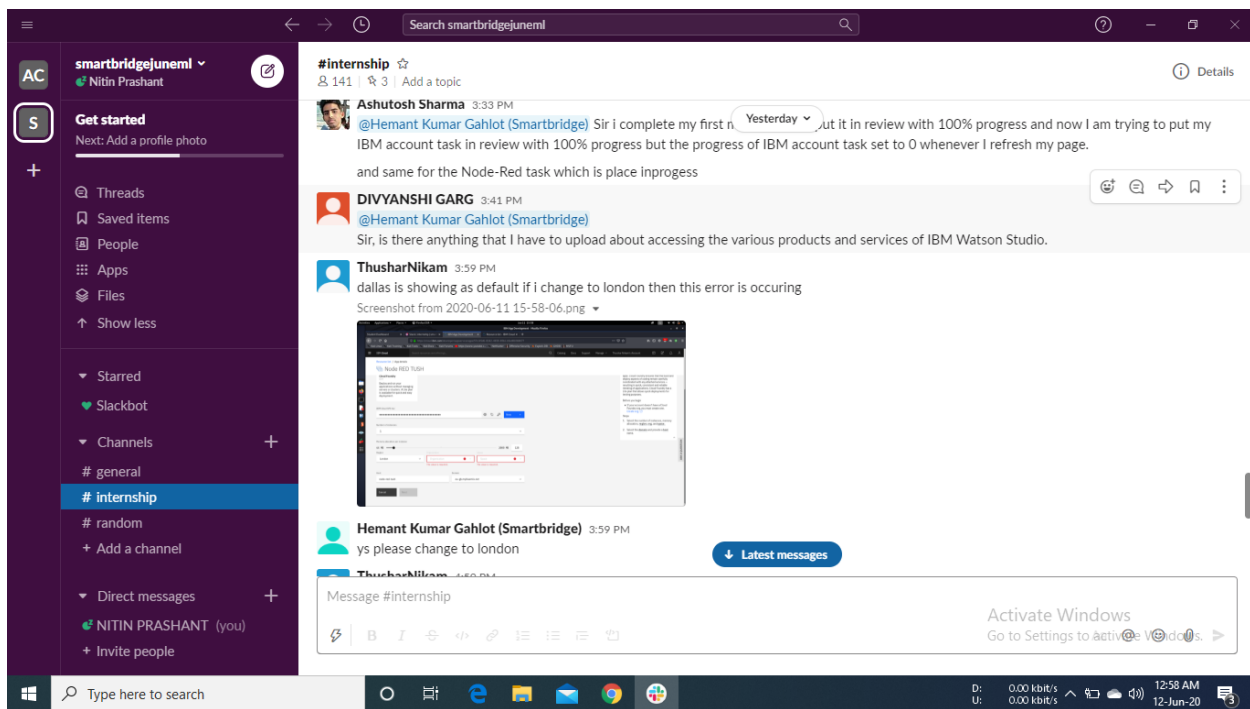
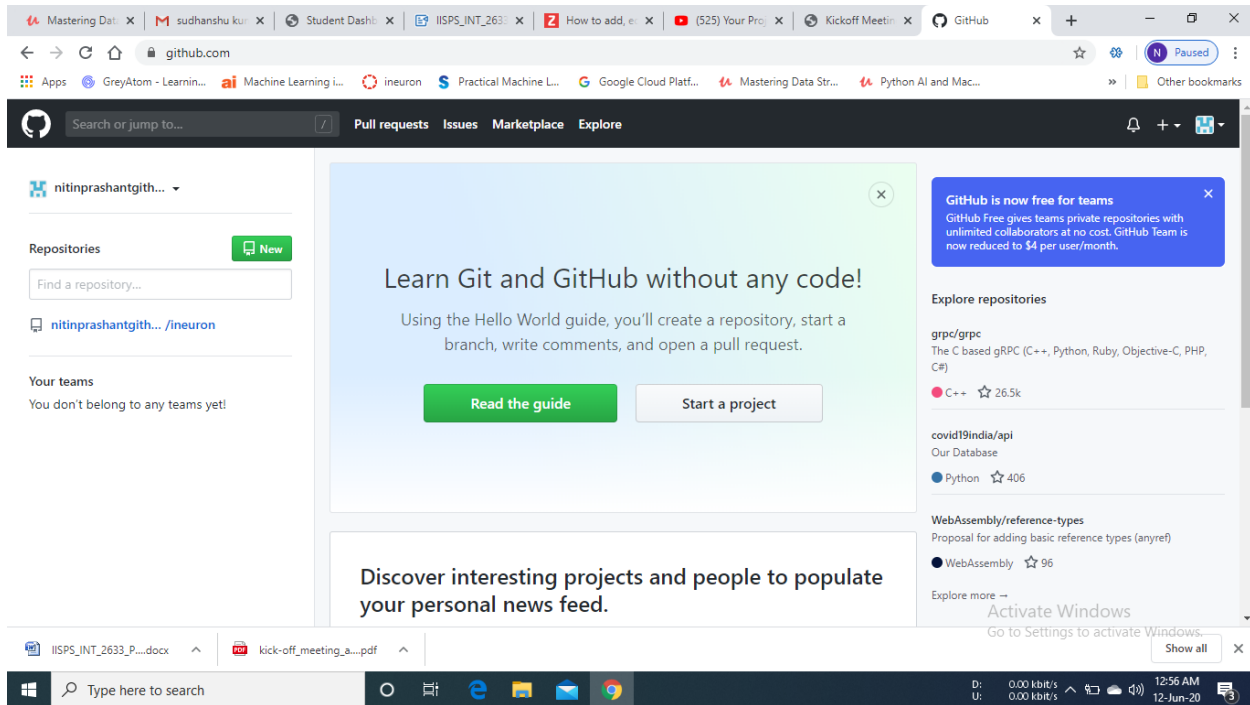
5.FUNCTIONAL REQUIREMENTS :- Different countries data is used and according to that their life expectancy will be predicted.

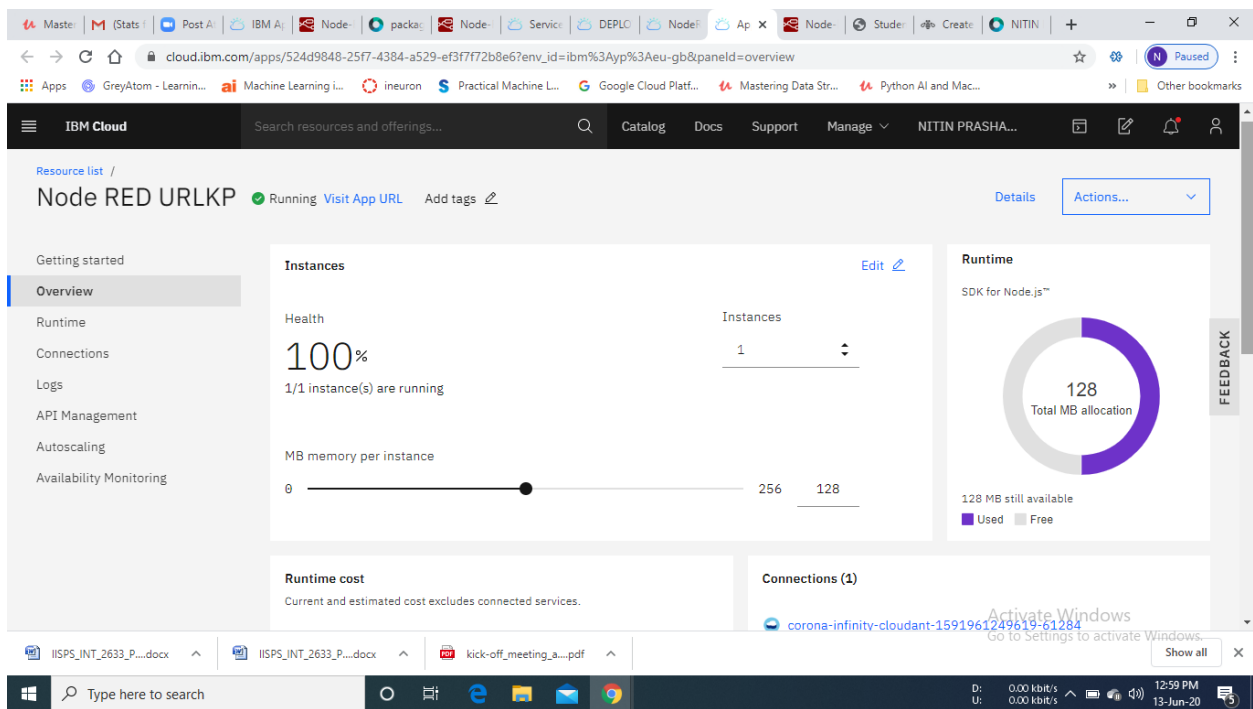
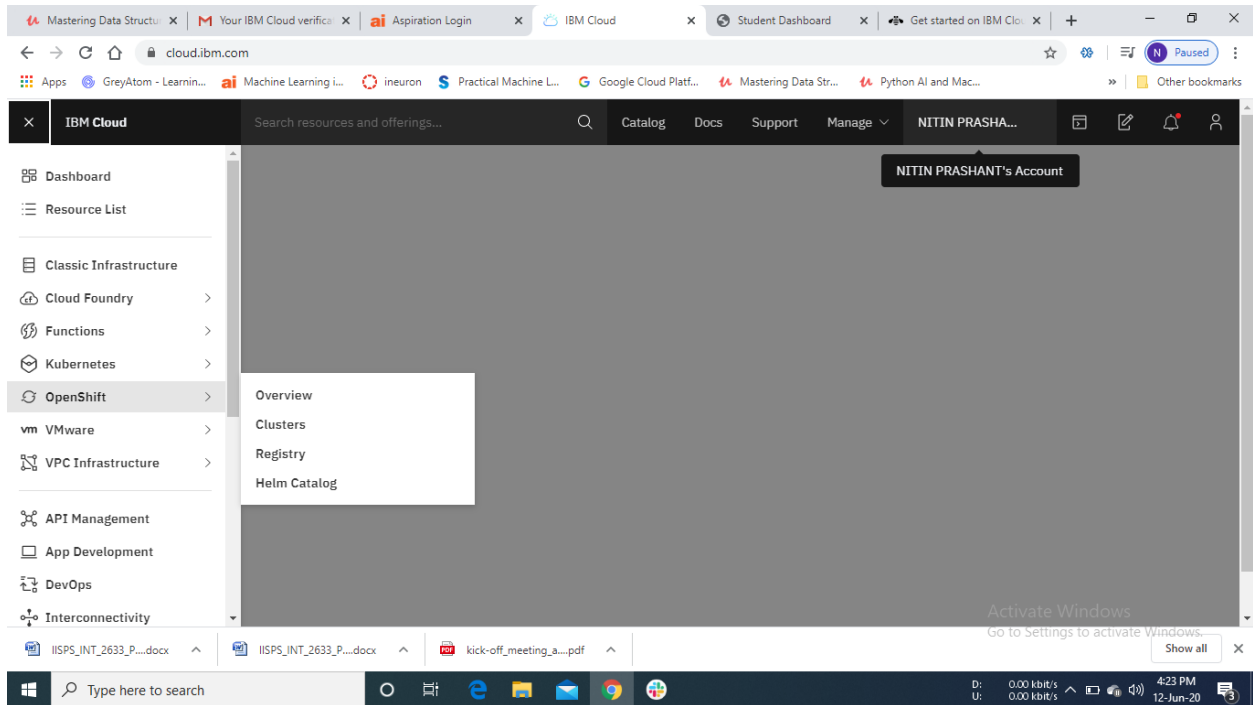
6.TECHNICAL REQUIREMENTS :- Machine learning, Model deployment , AUTO AI , Python , IBM cloud, IBM services.

7.SOFTWARE REQUIREMENTS :- Anaconda, Jupyter Notebook, Pycharm , IBM cloud platform.

8.PROJECT DELIVERABLES :- An application that predicts Life expectancy of different countries.

9.PROJECT SUMMARY :- The project tries to create a model based on data to evaluate the life expectancy for different countries. different algorithms have been used to test if they can maintain their accuracy in predicting the life expectancy for data they haven't been trained.





Mastering | x | Inbox (5,16) | x | ai Machine Le | x | MLD6th jun | x | Student Da | x | How To Ma | x | Tryit Editor | x | (526) 2nd C | x | Page Title | x | + | - |

File | D:/internship/smartbridge/website.html

Apps | GreyAtom - Learnin... | ai Machine Learning L... | ineuron | S Practical Machine L... | Google Cloud Platt... | Mastering Data Str... | Python AI and Mac... | Other bookmarks

My Website

A website created by me.

Link Link Link Link

Footer

Activate Windows
Go to Settings to activate Windows.

Taskbar: Type here to search | Taskbar icons | System tray: 9:12 PM 16-Jun-20

Inbox (5,185) - np.nitin | x | Student Dashboard | x | (526) IBM Watson Mac | x | Cloud Object Storage - | x | IBM Watson Studio | x | Privacy error | x | + | - |

cloud.ibm.com/objectstorage/crm%3Av1%3Abluemix%3Apublic%3Acloud-object-storage%3Aglobal%3Aa%2F3c838b8e39c34961925dd80fee82552f%3...

Apps | GreyAtom - Learnin... | ai Machine Learning L... | ineuron | S Practical Machine L... | Google Cloud Platt... | Mastering Data Str... | Python AI and Mac... | Other bookmarks

IBM Cloud | Search resources and offerings... | Catalog | Docs | Support | Manage | NITIN PRASHA... |

Resource list / Cloud Object Storage-5n /

cloud-object-storage-5n-cos-standard-j6d

Aspera transfers | Details | Actions...

Getting started | Buckets | Objects | **Configuration** | Access policies | Endpoint | Service credentials | Connections | Usage details | Plan

No IBM Cloud Monitoring with Sysdig service instance is currently associated with this bucket.

Archive rule [Create](#)

Archive lifecycle rules allow users to change their objects from their default bucket storage class to the archive storage class after a certain period. Archive is our lowest cost tier and is best for items that are not accessed often.

Expiration rule

Object Expiration rules allow you to manage storage costs by scheduling deletion of objects that are no longer needed after a specified amount of time. [Learn more](#)

[Add rule](#)

Rule name	Prefix filter	Expiration days/date	State
-----------	---------------	----------------------	-------

Taskbar: Type here to search | Taskbar icons | System tray: 7:00 AM 17-Jun-20

Browser tabs: Inbox (5,185) - np.nitin... Student Dashboard (526) IBM Watson Mac... Service Details - IBM Cl... IBM Watson Studio Privacy error

Address bar: cloud.ibm.com/services/pm-20/crn%3Av1%3Abluemix%3Apublic%3Apm-20%3Aeu-gb%3Aa2f3c838b8e39c34961925dd80fee82552f%3Ac15e7e76-2...

Navigation: Apps GreyAtom - Learnin... Machine Learning L... ineuron Practical Machine L... Google Cloud Platf... Mastering Data Str... Python AI and Mac... Other bookmarks

IBM Cloud Search resources and offerings... Catalog Docs Support Manage NITIN PRASHA...

Resource list / Machine Learning-cr Active Add tags Details Actions...

Manage Service credentials Plan Connections

Watson Machine Learning

Welcome! Get Started with Watson Machine Learning in Watson Studio.

Access in Watson Studio

Activate Windows Go to Settings to activate Windows.

Windows taskbar: Type here to search 7:01 AM 17-Jun-20

Browser tabs: Inbox (5,185) - np.nitin... Student Dashboard (526) IBM Watson Mac... Service Details - IBM Cl... IBM Watson Studio Privacy error

Address bar: eu-gb.dataplatform.cloud.ibm.com/home?context=wdp&apps=watson_machine_learning&nocache=true

Navigation: IBM Watson Studio NITIN PRASHANT's Account

Start by setting up your deployment spaces
A deployment space is where you prepare data and assets for deployment.

Watson services View all (1) Add service +

Instance name	Service	Plan	Tool
Machine Learning-cr	Machine Learning		

New in gallery

Activate Windows Go to Settings to activate Windows. Explore

Windows taskbar: Type here to search 7:02 AM 17-Jun-20

IBM Watson Studio

My Projects / spam detection / salary prediction of employee - P...

Model

salary prediction of employee - P4 ExtraTreesRegressorEstimator

Overview Evaluation Deployments Lineage

Summary

Machine learning service	Machine Learning-cr
Model Type	wml-hybrid_0.1
Runtime environment	/v4/runtimes/hybrid_0.1
Training date	17 Jun 2020, 4:16 PM

Input Schema

Salary_Data (1).csv datasets_45152_82...csv Removed

Activate Windows
Go to Settings to activate Windows.
Show all

IBM Watson Studio

My projects / spam detection

0 assets selected.

Name	Type	Created by	Last modified
CSV Salary_Data (1).csv	Data Asset	NITIN PRASHANT	Jun 17, 2020, 03:45 PM
CSV spamsms-1.csv	Data Asset	NITIN PRASHANT	Jun 17, 2020, 09:38 AM

AutoAI experiments

New AutoAI experiment +

Name	Status	Model type	Last modified
salary prediction of employee	Completed	Regression	Jun 17, 2020, 04:07 PM

Notebooks

New notebook

Activate Windows
Go to Settings to activate Windows.
Show all

IBM Watson Studio interface showing a project named "spam detection" with a sub-project "salary prediction of employee". The interface displays a "Relationship map" and a "Progress map".

Relationship map
Prediction column: Salary

The Relationship map shows a hierarchical structure of components: **FEATURE TRANSFORMERS**, **PIPELINES**, and **TOP ALGORITHMS**. The data source is **Salary_Data (1).csv**.

Progress map
Swap view

Experiment completed
8 PIPELINES GENERATED
8 pipelines generated from algorithms. See pipeline leaderboard below for more detail.
Time elapsed: 14 minutes

Code Editor
Python 3.6 with Spark

```
In [1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.svm import SVC
from sklearn.model_selection import train_test_split

Waiting for a Spark session to start...
Spark Initialization Done! ApplicationId = app-20200617103900-0001
KERNEL_ID = 40826b6b-d45d-4995-81e6-64434c0bdfef

In [2]: import types
import pandas as pd
from botocore.client import Config
import ibm_boto3

def __iter__(self): return 0

# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
```

IBM Watson Studio interface showing the project **project_empty_watson_studio**. The project was last updated on Jun 17, 2020. It has 0 Assets and 1 Collaborator. The Overview tab is selected, displaying the project details and a Recent activity section. The project description states: "No description available". The Storage section shows 0 Byte used Cloud Object Storage. The Recent activity section is currently empty, with a message: "Alerts related to this project appear here when the project is active." The interface includes a top navigation bar with the IBM Watson Studio logo, an Upgrade button, and the user's account information (NITIN PRASHANT's Account). The bottom of the screen shows a Windows taskbar with various application icons and a system tray displaying the time (5:50 PM) and date (17-Jun-20).

IBM Watson Studio interface showing the project **Predict buying behavior with ML**. The project was last updated on Jun 17, 2020. It has 2 Assets and 1 Collaborator. The Assets tab is selected, displaying the project details and a Recent activity section. The project description states: "Train a machine learning model in a Jupyter notebook using customer purchase data to predict what new customers will likely buy." The Storage section shows 0 Byte used Cloud Object Storage. The Recent activity section shows a message: "Project import complete - Predict buying behavior with ML was imported successfully. View import summary. 05:53 PM". The interface includes a top navigation bar with the IBM Watson Studio logo, an Upgrade button, and the user's account information (NITIN PRASHANT's Account). The bottom of the screen shows a Windows taskbar with various application icons and a system tray displaying the time (5:54 PM) and date (17-Jun-20).

IBM Watson Studio interface showing a Jupyter Notebook and an Experiment summary.

Jupyter Notebook:

- Description:** This notebook consists of ML model to predict life expectancy
- Code:**

```
In [1]: import types
import pandas as pd
from botocore.client import Config
import ibm_boto3

def __iter__(self): return 0

#@hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
client_382f253b5d3646209084fa79dd3962aa = ibm_boto3.client(service_name='s3',
    ibm_api_key_id='hvsfx-kp6Y_hbk140H2LHd50z89nf7nzi7nUD_VrJRW',
    ibm_auth_endpoint='https://iam.cloud.ibm.com/oidc/token',
    config=Config(signature_version='oauth'),
    endpoint_url='https://s3.eu-geo.objectstorage.service.networklayer.com')

body = client_382f253b5d3646209084fa79dd3962aa.get_object(Bucket='projectemptywatsonstudio-donotdelete-pr-oynwtfsbfhjga',Key='Life_Expectancy_Data.csv')
# add missing __iter__ method, so pandas accepts body as file-like object
if not hasattr(body, "__iter__"): body.__iter__ = types.MethodType(lambda x: body, body)
```

Experiment summary:

- Relationship map:** Prediction column: Life expectancy. The diagram shows a funnel of Feature Transformers, Pipelines, and Top Algorithms leading to the prediction column.
- Progress map:** Experiment completed. 8 PIPELINES GENERATED. Time elapsed: 4 minutes.

IBM Watson Studio

My Projects / project / Life_Expectency_Auto_AI - P3 Ex...

Model

Life_Expectency_Auto_AI - P3 ExtraTreesRegressorEstimator

Overview Evaluation **Deployments** Lineage

[Add Deployment +](#)

NAME	STATUS	TYPE	ACTIONS
life_expectency	Ready	Web Service	

Activate Windows
Go to Settings to activate Windows... [Show all](#)

datasets_12603_17....csv | spam_svc (1).ipynb | Salary_Data (1).csv | datasets_45152_82....csv Removed

Type here to search

Windows taskbar: 7:13 PM 17-Jun-20

IBM Watson Studio

My projects / project

[Add to project +](#)

Name	Shared	Scheduled	Status	Language	Last editor	Last modified
life_expectency				Python 3.6	NITIN PRASHANT	Jun 17, 2020

Deep learning experiments [New deep learning experiment +](#)

Name	Last Modified
You don't have any Deep learning experiments yet	

Models [Import model +](#)

Watson Machine Learning model

Name	Type	Runtime	Last modified
Life_Expectency_Auto_AI - P3 ExtraTreesRegressorEstimator	wml-hybrid_0.1	hybrid_0.1	Jun 17, 2020

Windows
Go to Settings to activate Windows... [Show all](#)

datasets_12603_17....csv | spam_svc (1).ipynb | Salary_Data (1).csv | datasets_45152_82....csv Removed

Type here to search

Windows taskbar: 7:20 PM 17-Jun-20

node-red-urlkp.eu-gb.mybluemix.net/red/#flow/99a80bbd.ec6eb8

Node-RED

Flow 1 Auto_AI_Flow

common

- inject
- debug
- complete
- catch
- status
- link in
- link out
- comment

function

- function

flows.json

dashboard

Layout Site Theme

Tabs & Links

- Home
 - Default
 - form
 - life expectancy
 - Auto_AI
 - form
 - life expectancy

Activate Windows

Go to Settings to activate Windows.

Show all

IBM Watson Studio

My projects / project / life_expency

File Edit View Insert Cell Kernel Help

Run

```
'created_at': '2020-07-02T09:24:53.996Z',
'type': 'model',
'description': 'Description of deployment',
'status_details': {'status': 'DEPLOY_SUCCESS'},
'model_type': 'scikit-learn-0.20',
'status': 'DEPLOY_SUCCESS',
'type': 'online',
'deployed_version': {'url': 'https://eu-gb.ml.cloud.ibm.com/v3/ml_assets/models/61f00faa-fc95-4af5-bd85-30638c058b2b/versions/777cbc39-e607-434f-a763-f457f5878a6c',
'guid': '777cbc39-e607-434f-a763-f457f5878a6c'}}

In [136]: scoring_url=client.deployments.get_scoring_url(deploy)

In [137]: scoring_url

Out[137]: 'https://eu-gb.ml.cloud.ibm.com/v3/wml_instances/c15e7e76-2abe-4068-80a4-d65274a11a1d/deployments/51695dc7-1020-411e-bb83-ac90690f2cd0/online'

In [145]: life_labels_test

Out[145]: Country      65.887500
Mongolia      75.650000
Poland        50.387500
Côte d'Ivoire
```

flows.json

Activate Windows

Go to Settings to activate Windows.

Show all

node-red-urlkp.eu-gb.mybluemix.net/red/#flow/312bb201.8d7bee

Node-RED

Flow 1

Auto_AI_Flow

common

- inject
- debug
- complete
- catch
- status
- link in
- link out
- comment

function

- function

msg.payload

life expectancy

http request

Pre Prediction

timestamp

PreToken

form

dashboard

Layout

Site

Theme

Tabs & Links

- Home
 - Default
 - form
 - life expectancy
 - Auto_AI
 - form
 - life expectancy

Activate Windows

Go to Settings to activate Windows.

Show all

flows.json

eu-gb.dataplatform.cloud.ibm.com/ml/deployments/8e98d8d9-a462-4c87-8ce3-832ce53b8073?projectId=072973ee-eb85-4fa4-9536-11e6bb00ac86&ml...

IBM Watson Studio

Upgrade

NITIN PRASHANT's Account

My projects / project / Life_Expectancy_Auto_AI - P3 Ex... / life_expectancy

Name	life_expectancy
Type	Web Service
Deployment ID	8e98d8d9-a462-4c87-8ce3-832ce53b8073
Status	Ready
Asset type	Model
Asset name	Life_Expectancy_Auto_AI - P3 ExtraTreesRegressorEstimator
Machine learning service	Machine Learning-cr
Created	Jul 2, 2020 9:03 PM
Last modified	Jul 2, 2020 9:03 PM

Activate Windows

Go to Settings to activate Windows.

Show all

flows (2).json

flows (1).json

flows.json

Type here to search

1:54 AM 03-Jul-20

eu-gb.dataplatform.cloud.ibm.com/ml/deployments/51695dc7-1020-411e-bb83-ac90690f2cd0?projectId=072973ee-eb85-4fa4-9536-11e6bb00ac86&ml...

AppsGreyAtom - Learnin...aiMachine Learning L...neuronSPractical Machine L...Google Cloud Platf...Mastering Data Str...Python AI and Mac...Other bookmarks

IBM Watson StudioUpgradeNITIN PRASHANT's AccountNP

My projects / project / life_expentency / life expectancy prediction

Deployment

Name	life expectancy prediction
Type	Web Service
Deployment ID	51695dc7-1020-411e-bb83-ac90690f2cd0
Status	Deploy success
Asset type	Model
Asset name	life_expentency
Machine learning service	Machine Learning-cr
Created	Jul 2, 2020 2:54 PM
Last modified	Jul 2, 2020 2:54 PM

flows (2).jsonflows (1).jsonflows.json

Type here to search

node-red-urlkp.eu-gb.mybluemix.net/ui/#/0?socketid=wfgWUzWruJZaa46sAAAT

AppsGreyAtom - Learnin...aiMachine Learning L...neuronSPractical Machine L...Google Cloud Platf...Mastering Data Str...Python AI and Mac...Other bookmarks

Home

Default

Adult Mortality *
263

infant deaths *
62

Alcohol *
0.01

percentage expenditure *
71.27

Hepatitis B *
65

Measles *
1154

BMI *
100

under-five deaths *
500

Polio *
6

Auto_AI

Country *
Afghanistan

Year *
2015

Status *
Developing

Adult Mortality *
2636

infant deaths *
62

Alcohol *
0.01

percentage expenditure *
71.27

Hepatitis B *
65

Measles *
0

flows.json

Type here to search

9:20 PM02-Jul-20

node-red-urlkp.eu-gb.mybluemix.net/ui/#/0?socketid=wfgWUzWruJZaa46sAAAT

AppsGreyAtom - Learnin...aiMachine Learning L...ineuronSPractical Machine L...Google Cloud Platf...Mastering Data Str...Python AI and Mac...Other bookmarks

Home

thinness 5-9 years *
17.3

Income composition of resources *
0.47

Schooling *
10.1

Developed *
0

Developing *
1

SUBMITCANCEL

life expectancy55.691250000000004

GDP *
584

Population *
33736494

thinness 1-19 years *
17.2

thinness 5-9 years *
17.3

Income composition of resources *
0.47

Schooling *
10.1

SUBMITCANCEL

life expectancy55.900000381469724

flows (2).jsonflows (1).jsonflows.json

Type here to search

D:0.00 kbit/sU:0.00 kbit/s

1:56 AM03-Jul-20

Activate Windows
Go to Settings to activate Windows.
Show all