

Project Scope

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.

The project works to create a model based on data provided by the World Health Organization (WHO) to evaluate the life expectancy for different countries in years. The data offers a timeframe from 2000 to 2015.

The output algorithms have been used to test if they can maintain their accuracy in predicting the life expectancy for data they haven't been trained. Four algorithms have been used:

Linear Regression

Linear Regression with Polynomic features

Decision Tree Regression

Random Forest Regression

Schedule:

Team:

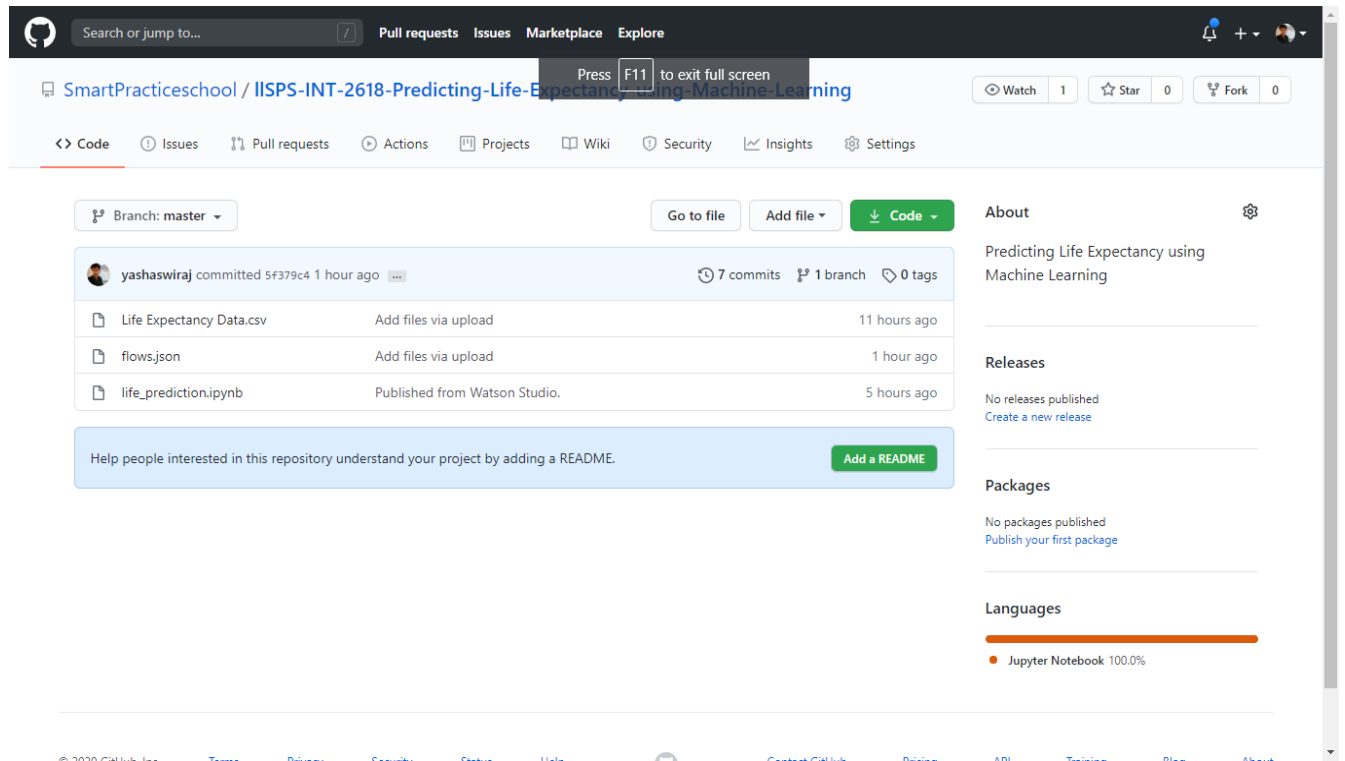
Name: Yashaswi Raj

Deliverables: None.

Setup The Development Environment:

Github: GitHub is a for-profit company that offers a cloud-based Git repository hosting service. Essentially, it makes it a lot easier for individuals and teams to use Git for version control and collaboration.

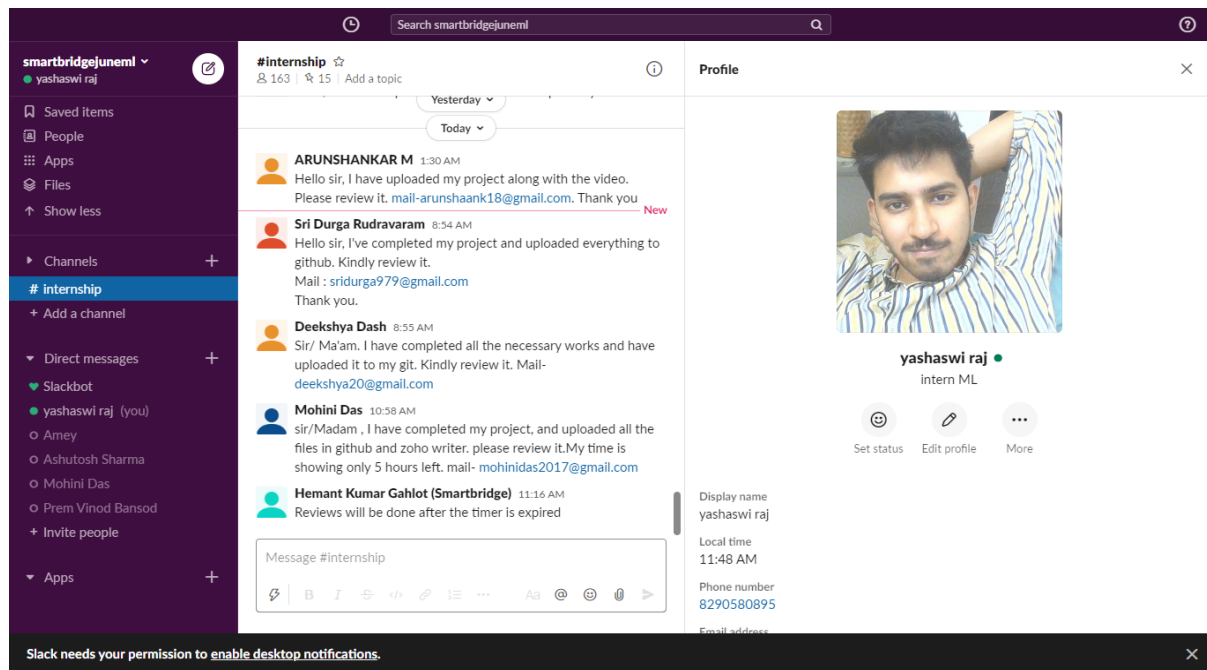
GITHUB ACCOUNT LINKED:



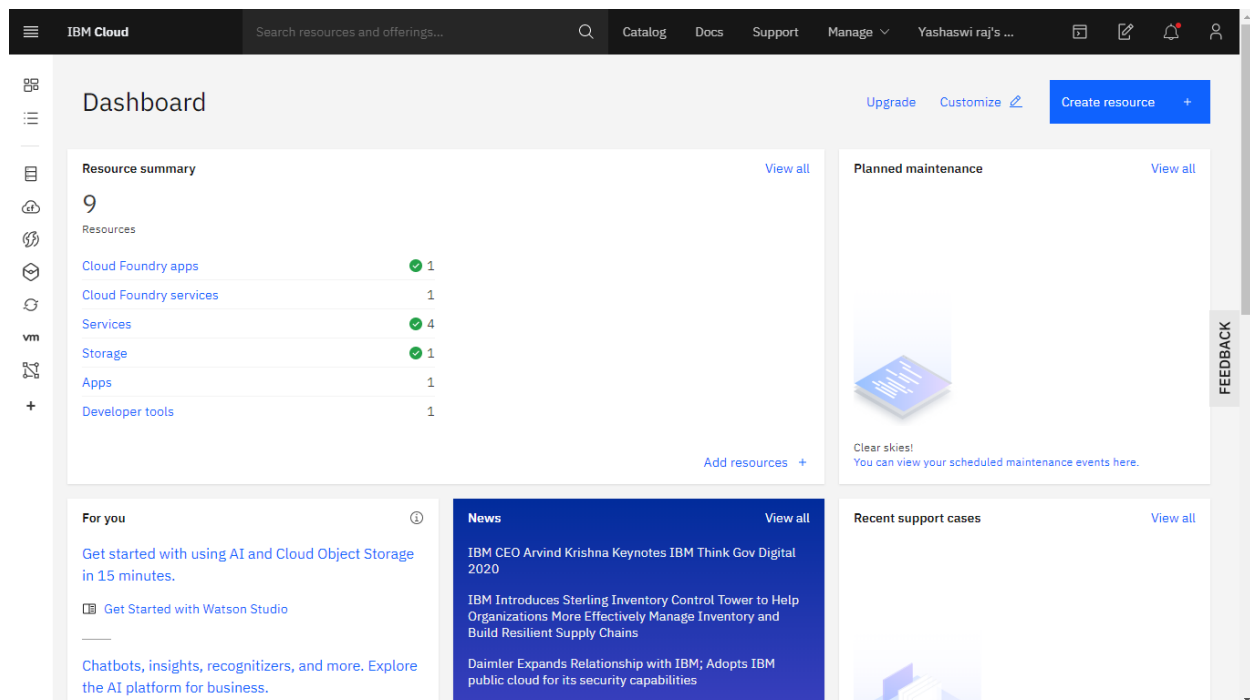
Slack:

Slack is essentially a chat room for your whole company, designed to replace email as your primary method of communication and sharing. Its workspaces allow you to organize communications by channels for group discussions and allows for private messages to share information, files, and more all in one place.

Slack account created:



IBM cloud account created:



Node-red Starter application:

The screenshot displays the IBM Cloud console interface for a Node RED LMGLN application. The top navigation bar includes the IBM Cloud logo, a search bar, and links to Catalog, Docs, Support, and Manage. The main content area is divided into two columns. The left column, titled 'Details', lists the App URL, Source, Resource group, Deployment target, and Created date. The right column, titled 'Deployment Automation', shows the Name, Location, Tool integrations, and Delivery Pipelines. A 'Services' section at the bottom left lists Cloudant with links to the dashboard and documentation. A 'Getting started quickly' section is also visible.

Details

App URL	https://node-red-lmgl.n.eu-gb.mybluemix.net
Source	https://eu-gb.git.cloud.ibm.com/yashaswiraj58/NodeREDLMGLN
Resource group	Default
Deployment target	Node RED LMGLN
Created	04/07/2020

Services

- Cloudant
 - [Open dashboard](#)
 - [Documentation](#)
 - Credentials

[Connect existing services](#) [Create service](#)

Deployment Automation

Name	NodeREDLMGLN
Location	London
Tool integrations	
Delivery Pipelines	
Name	NodeREDLMGLN
Status	Success
Last input	Last commit by IBM Cloud (1 day ago)

Getting started quickly

Configuring your app

IBM WATSON STUDIO: ML MODEL

The screenshot displays the IBM Watson Studio console interface for an ML model. The top navigation bar includes the IBM Watson Studio logo, an 'Upgrade' button, and a user account dropdown. The main content area is divided into two columns. The left column, titled 'Add data source', shows a file upload area and a table of data sources. The right column, titled 'Configure details', shows the prediction column, prediction type, and optimized metric.

Add data source

Drop a .csv file here or browse for a file to upload.

— OR —

Select from project

Data source	Size	Columns
Salary_Data.csv	0.00 MB	2

Configure details

What do you want to predict?

Prediction column: Salary

PREDICTION TYPE: Regression

OPTIMIZED METRIC: RMSE

Experiment settings: Preparing

IBM Watson Machine Learning: Salary Prediction

Press **F11** to exit full screen

Salary

prediction

117242.85357142857

YearsExperience *

10

SUBMIT

CANCEL

Predict Life Expectancy with python:

Dataset:

IBM Watson Studio

Upgrade

Yashaswi raj's Account

YR

My Projects / life_expectancy_prediction / Life Expectancy Data.csv

Preview

Activity

Schema: 22 Columns
Preview: First 1000 rows

Last refresh: 50 seconds ago

Refine

Country String	Year String	Status String	Life expect... String	Adult Mort... String	infant de... String	Alcohol String	percentage expend... String
Antigua and Barb	2011	Developing	75.7	136	0	7.84	1810.875316
Antigua and Barb	2010	Developing	75.6	138	0	7.84	1983.956937
Antigua and Barb	2009	Developing	75.4	14	0	7.82	149.3587355
Antigua and Barb	2008	Developing	75.2	142	0	8.27	180.7762695
Antigua and Barb	2007	Developing	75	144	0	8.64	257.9665308
Antigua and Barb	2006	Developing	74.8	145	0	8.93	216.3146941
Antigua and Barb	2005	Developing	74.6	147	0	8.15	1455.608186
Antigua and Barb	2004	Developing	74.4	149	0	7.28	22.86295206
Antigua and Barb	2003	Developing	74.2	151	0	7.16	1158.065259
Antigua and Barb	2002	Developing	74	153	0	7.21	927.4075855
Antigua and Barb	2001	Developing	73.8	154	0	7.51	163.7676978
Antigua and Barb	2000	Developing	73.6	156	0	7.27	1127.74347
Argentina	2015	Developing	76.3	116	8		0
Argentina	2014	Developing	76.2	118	8	7.93	847.3717463

Information

Data Asset

Life Expectancy Data. CSV

Description

No description is available for this asset.

Tags

No description is available for this asset.

Added: Jul 06, 2020, 12:52 AM

Size: 333.442 KB

Integrated Notebook:

IBM Watson Studio

Upgrade

Yashaswi raj's Account

YR

My projects / life_expectancy_prediction / life_prediction

```
->watson-machine-learning-client) (0.9.3)
Requirement already satisfied: docutils<0.16,>=0.10 in /opt/conda/envs/Python36/lib/python3.6/site-packages (from ibm-cos-sdk-core==2.6.0->ibm-cos-sdk->watson-machine-learning-client) (0.14)

In [67]: from watson_machine_learning_client import WatsonMachineLearningAPIClient

In [68]: wml_credentials={
    "apikey": "lpsJj-ktlhxvT3yxk4mjfwUbV2FPstd30he7UaxSXkFMB",
    "iam_apikey_description": "Auto-generated for key 5d5f9975-91f0-4acc-ad7c-50d146c5d475",
    "iam_apikey_name": "wml-writer",
    "iam_role_crn": "crn:v1:bluemix:public:iam::::serviceRole:Writer",
    "iam_serviceid_crn": "crn:v1:bluemix:public:iam-identity:a/b0ddf22adae84e678ed932a4bb21b260::serviceid:ServiceId-79c4c30a-25c9-4c6c-b84d-993b53cf7de2",
    "instance_id": "173e9d75-fe2a-40f9-b92a-a02e5df85be8",
    "url": "https://eu-gb.ml.cloud.ibm.com"
}

In [69]: client=WatsonMachineLearningAPIClient( wml_credentials )

In [70]: model_props={client.repository.ModelMetaNames.AUTHOR_NAME: "Yashaswi",
    client.repository.ModelMetaNames.AUTHOR_EMAIL: "yashaswiraj58@gmail.com",
    client.repository.ModelMetaNames.NAME:"life_expectation"}

In [71]: model_artifact=client.repository.store_model(obj,model_props=model_props)
    guid=model_artifact['metadata']['guid']

In [72]: client.deployments.list()

-----
GUID                                NAME                TYPE    STATE      CREATED              FRAMEWORK      ART
FACT TYPE
d0a81680-abb5-4047-a920-84271385dece Life_Expectancy    online  DEPLOY_SUCCESS  2020-07-06T01:23:26.792Z  scikit-learn-0.20  mod
el
-----
```

Predict Life Expectancy without python:

IBM Cloud Service:

The screenshot shows the IBM Cloud console's 'Resource list' page. The top navigation bar includes the IBM Cloud logo, a search bar, and links to Catalog, Docs, Support, and Manage. A user profile for 'Yashaswi raj's ...' is visible. The main content area is titled 'Resource list' and features a table with columns for Name, Group, Location, Status, and Tags. A sidebar on the left lists various resource categories like Devices, VPC infrastructure, Clusters, Cloud Foundry apps, Cloud Foundry services, and Services. The 'Services' category is expanded, showing a list of active services including Continuous Delivery, Watson Studio-ko, node-red-impln-cloudant-1593859681464, and pm-20-tc. A 'Create resource' button is located in the top right corner.

Name	Group	Location	Status	Tags
Continuous Delivery	Default	London	Active	—
Watson Studio-ko	Default	London	Active	—
node-red-impln-cloudant-1593859681464	Default	Chennai 01	Active	—
pm-20-tc	Default	London	Active	cpda...

Create Watson Project:

The screenshot displays the IBM Watson Studio interface for a project named 'life_expectancy_prediction'. The top navigation bar shows the IBM Watson Studio logo, an 'Upgrade' button, and the user's account information. The project name is prominently displayed, along with the last update date (Jul 06, 2020). The interface includes tabs for Overview, Assets, Environments, Jobs, Deployments, Access Control, and Settings. The 'Overview' tab is selected, showing a summary of the project's status, including the number of assets (4) and collaborators (1). The 'Recent activity' section is currently empty, displaying a message that alerts will appear when the project is active. The 'Collaborators' section lists 'Yashaswi raj' as the admin. A 'Readme' button is visible in the top right corner.

life_expectancy_prediction

Last Updated: Jul 06, 2020

4 Assets, 1 Collaborators

Overview

Date created: Jul 06, 2020

Description: No description available

Storage: 86.09 MB used (Cloud Object Storage)

Collaborators: Yashaswi raj (Admin)

Recent activity

Alerts related to this project appear here when the project is active.

Create Machine Learning Service:

IBM Watson Studio

Upgrade

Yashaswi raj's Account

YR

My projects / life_expectancy_prediction

Launch IDE

Add to project

Name	Shared	Scheduled	Status	Language	Last editor	Last modified
life_prediction				Python 3.6	Yashaswi raj	Jul 06, 2020
life expectancy prediction - P3 sdk notebook				Python 3.6	Yashaswi raj	Jul 06, 2020

Deep learning experiments

New deep learning experiment

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

Models

Watson Machine Learning model

Import model

Name	Type	Runtime	Last modified
life expectancy prediction - P3 ExtraTreesRegressorEstimator	wml-hybrid_0.1	hybrid_0.1	Jul 06, 2020
life_expectation	scikit-learn-0.20	python-3.6	Jul 06, 2020

Auto AI Experiment:

IBM Watson Studio

Upgrade

Yashaswi raj's Account

YR

My projects / life_expectancy_prediction / life expectancy prediction

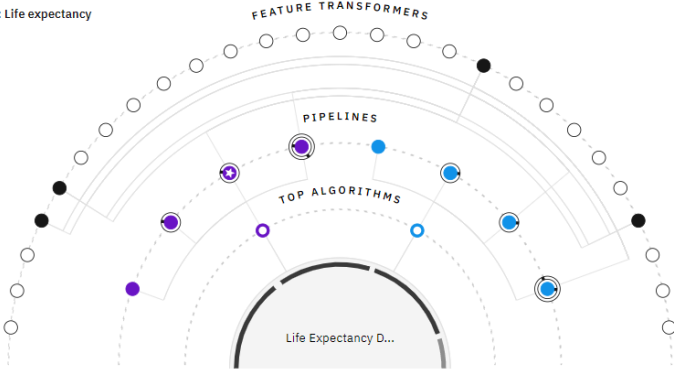
Experiment summary

Pipeline comparison

Rank by: Root mean squared err... Score: Cross validation Holdout

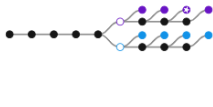
Relationship map

Prediction column: Life expectancy



Progress map

Swap view



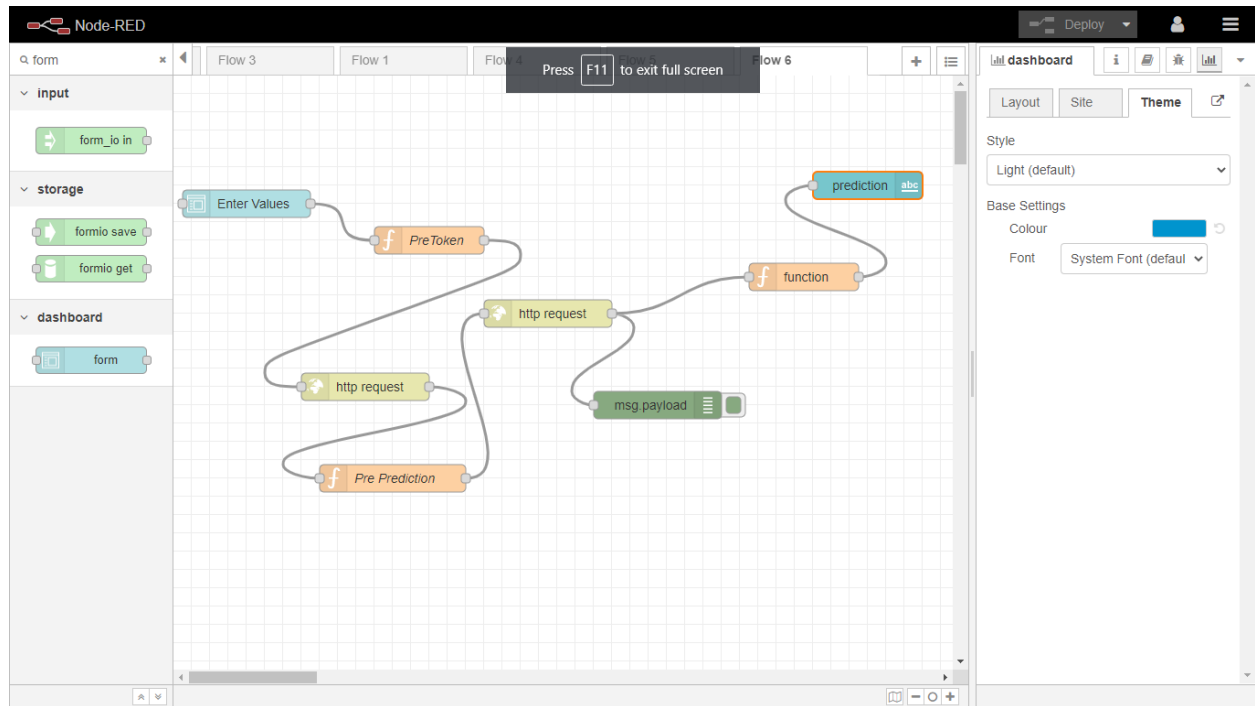
Running
FINISHING UP
autoai execution completed
Time elapsed: 3 minutes

View full log

Pipeline leaderboard

Rank	Name	Algorithm	RMSE (Optimized)	Enhancements	Build time
------	------	-----------	------------------	--------------	------------

Node-Red Flow:



Life Expectancy Prediction:

Prediction

life_expectancy

prediction **76.83000030517579**

Enter Values

Country
India

Year
2015

Status
Developed

Adult Mortality
96

infant deaths
12

Alcohol
0.1

percentage expenditure
86.9

Hepatitis B
65

Measles
1154

BMI
8.9

under-five deaths
9