

Project Name: Analyze IoT sensor data with machine learning

Name : Ajay Chaudhary

Module: Part 2: Build machine learning Model

Sub module: Download the Dataset

1. Download database

Sub module: Create Watson Studio project

1. Go to Watson studio services.
2. Click create new project.
3. Click on create empty project.
4. Give “weather_prediction” as the name of the project.

Sub module: Add AutoAI to project and Create Watson Machine Learning instance

1. Click on add to project and select auto AI experiment
2. Click on new to create new Auto AI experiment
3. Give name of experiment I choose “weather-foracast”
4. Click on associate a machine learning service instance
5. Click on new service
6. Select Machine learning as new service and create it.
7. Select and click o associate service.
8. Click on reload option on AutoAI page.
9. Click on create on AutoAI page.

Sub module: Add Dataset to project and running experiment

1. Once data is added and select rainfall as output value
2. AutoAi automatically detect model as regression type.
3. It select Prediction Type as Binary classification

Projects / weather_prediction / weather_forecasting

Announcement Cloud Pak for Data as a Service / IBM Satellite Beta starts November 30th. [Learn more.](#)

Add data source

Drop or browse for a csv file.

[Browse](#) or [Select from project](#)

IoT Analysis final-dataset.csv
Size: 0.01 MB | Columns: 4

Configure details

What do you want to predict?

Prediction column ⓘ

Rainfall

Prediction column: Rainfall

PREDICTION TYPE	POSITIVE CLASS	OPTIMIZED METRIC
Binary Classification ⓘ	1	Accuracy ⓘ

Experiment settings ⚙️ [Run experiment](#) ▶️

Experiment settings

Prediction column: Rainfall (INT) | Data source: IoT Analysis final-dataset.csv ⓘ

Data source
Prediction
Runtime

Data source settings

Training data split

You can optionally adjust the percentage of your data source to use for creating, optimizing, and validating pipelines. Only recommended for large data sets to avoid decreasing the quality of the pipelines.

85% 95%

Training data split: **90%** — 3 folds | Holdout data split: 10%

Select columns to include 4 / 4

Select columns with data that support the prediction column.

Search columns

<input checked="" type="checkbox"/> Column name	Type
---	------

4. Select all the algorithms to run.
5. Run experiment

Projects / weather_prediction / weather_forecasting

Announcement Cloud Pak for Data as a Service / IBM Satellite Beta starts November 30th. [Learn more.](#)

Experiment summary

Pipeline comparison

Rank by: Accuracy (Optimize...)

Score: Cross validation | Holdout

Prediction column: Rainfall

Progress map

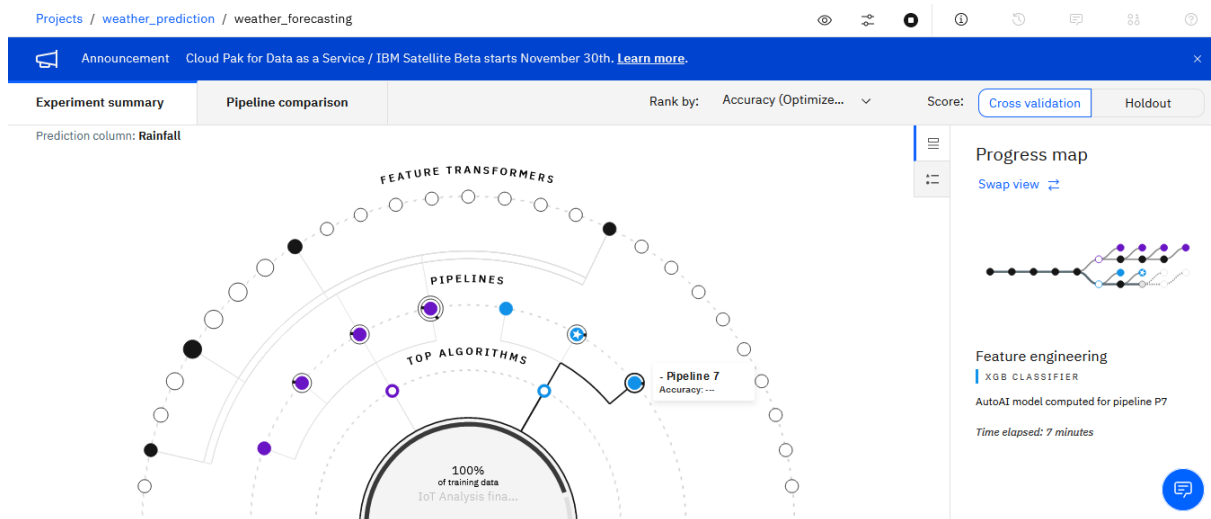
[Swap view](#)

Model selection

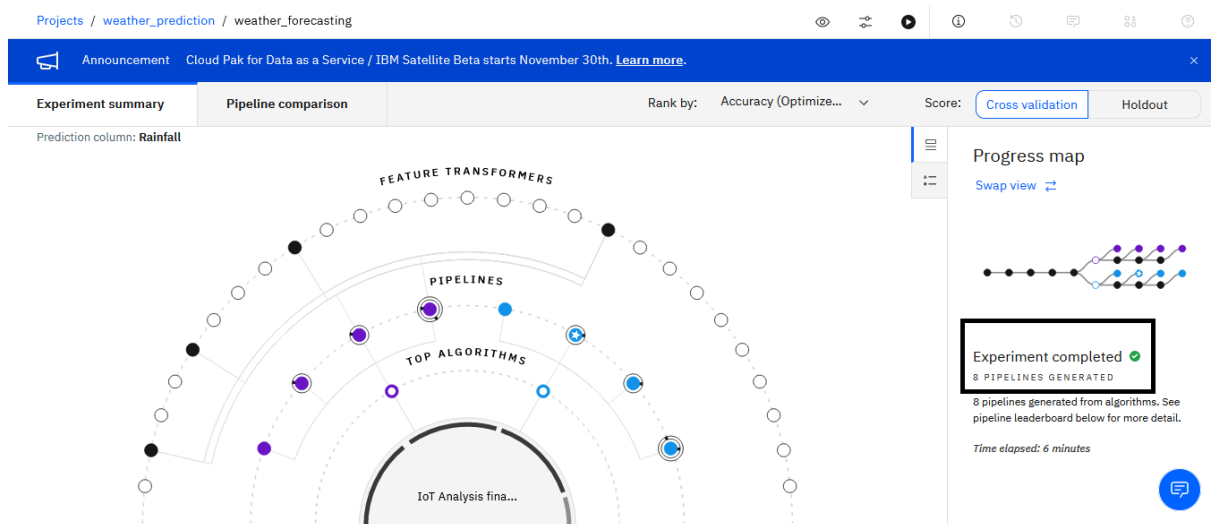
IOT ANALYSIS FINAL...

Selecting algorithms for pipeline generation using 10% of training data. Discarding underperforming algorithms and keeping the top 2 algorithms.

Time elapsed: 5 minutes



6. Experiment completed



7. find best model and save it

Projects / weather_prediction / weather_forecasting

Announcement Cloud Pak for Data as a Service / IBM Satellite Beta starts November 30th. [Learn more.](#)

Experiment summary Pipeline comparison Rank by: Accuracy (Optimize... Score: Cross validation Holdout

Rank	↑	Name	Algorithm	Accuracy (Optimized)	Enhancements	Build time
★ 1		Pipeline 6	XGB Classifier	0.945	HPO-1	00:00:21 Save as
2		Pipeline 7	XGB Classifier	0.945	HPO-1 FE	00:01:21
3		Pipeline 8	XGB Classifier	0.945	HPO-1 FE HPO-2	00:00:48
4		Pipeline 1	Random Forest Classifier	0.939	None	00:00:01
5		Pipeline 2	Random Forest Classifier	0.939	HPO-1	00:00:15
6		Pipeline 3	Random Forest Classifier	0.939	HPO-1 FE	00:00:42

8. XGB classifier gives highest accuracy hence we save it.

9. Save the model by default name.

10. Click on view in project.

Sub module: Deployment of the model

1. Click on promote to deployment space.
2. Click on the new space to deploy the model.
3. Give the space name I give it weather-forecasting-model name.
4. Select cloud storage and Machine learning services.
5. Click on create.
6. Once create click on create.
7. Click on promote.
8. Once done go to the navigation icon and under deployment spaces click view all space.
9. Select your machine learning model.
10. Click on newly created model.
11. Click on deployment.
12. Under deployment tab click on online
13. Give the name of the model.
14. Click on deploy.
15. Model is deployed.
16. Click on deployed project.
17. We got URL of various field to use in python, JS, Java and cURL and API end point.