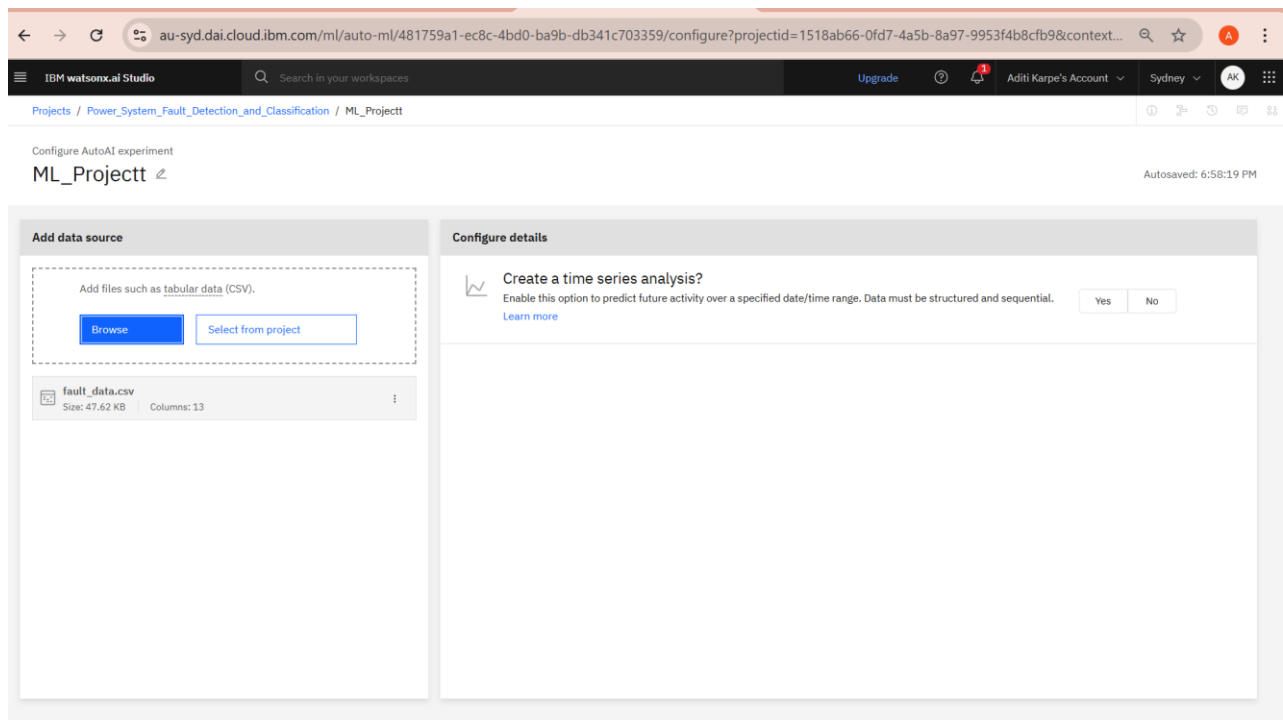


POWER SYSTEM FAULT DETECTION AND CLASSIFICATION

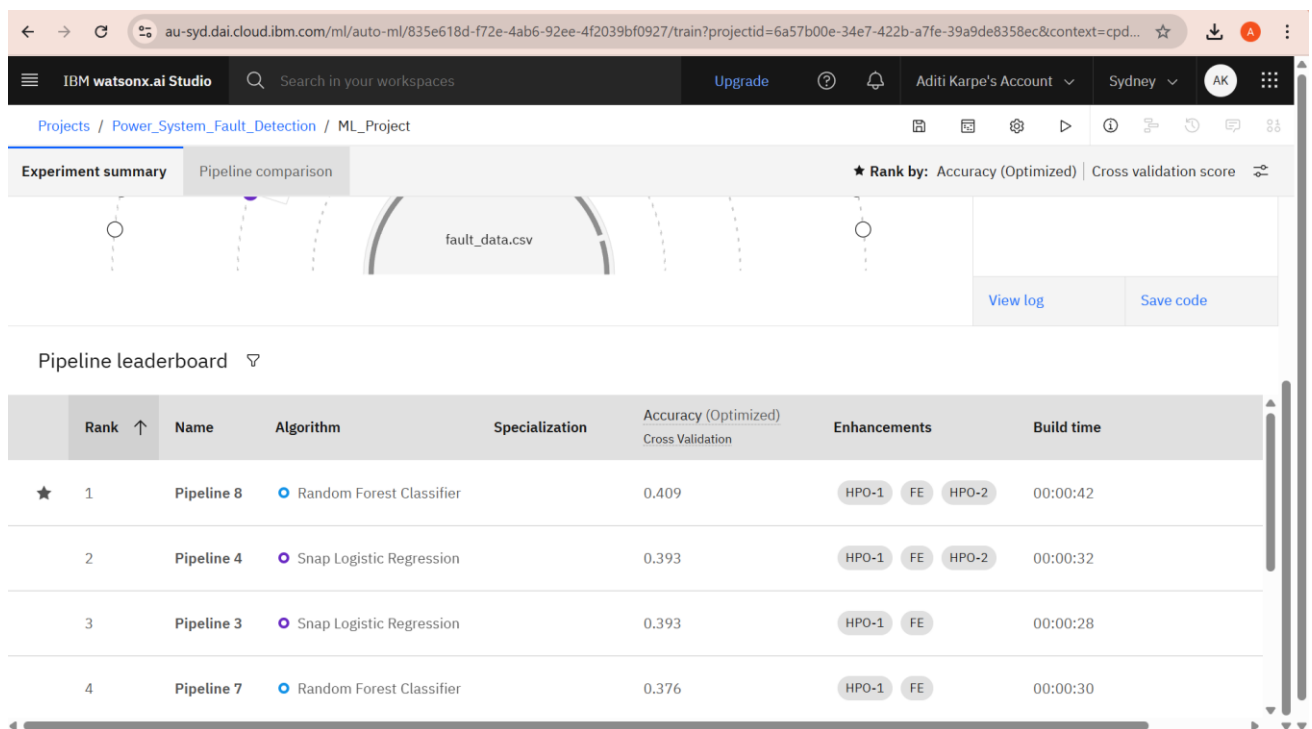
- ❖ **Problem Statement:** Design a machine learning model to detect and classify different types of faults in a power distribution system. Using electrical measurement data (e.g., voltage and current phasors), the model should be able to distinguish between normal operating conditions and various fault conditions (such as line-to-ground, line-to-line, or three-phase faults). The objective is to enable rapid and accurate fault identification, which is crucial for maintaining power grid stability and reliability.

Following are the steps and output :

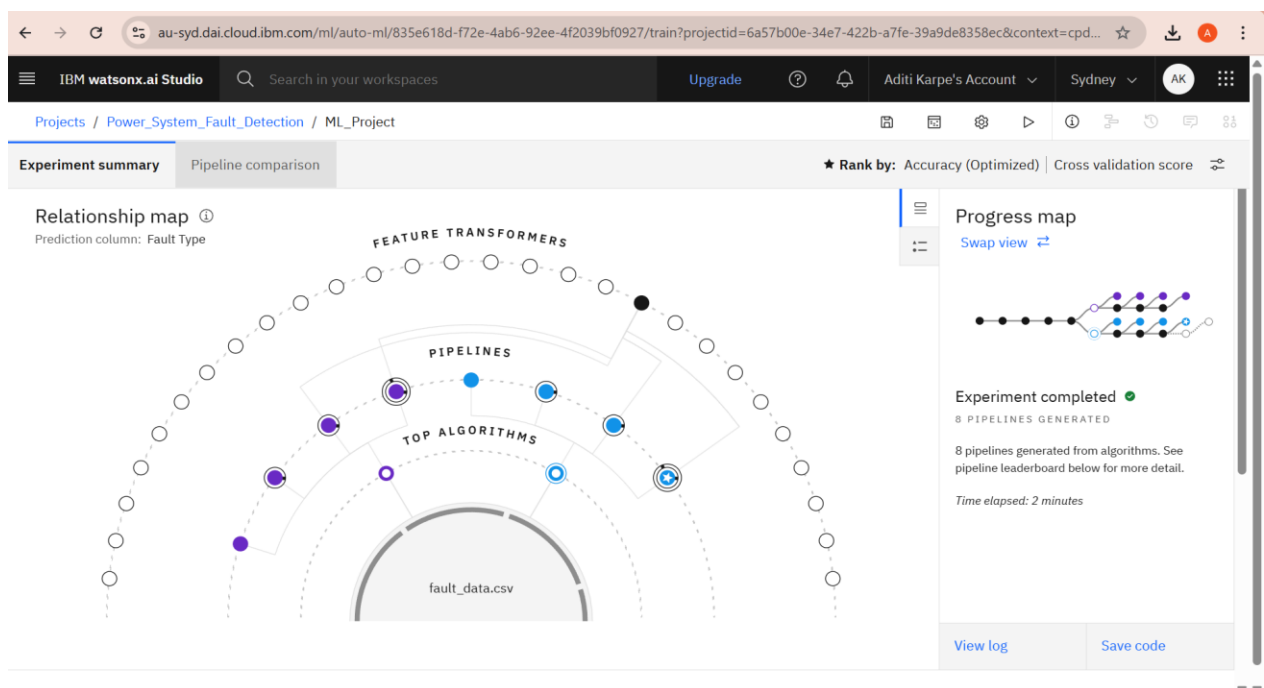
Step 1: Uploaded fault_data.csv as the dataset in IBM Watsonx.ai Studio.



Step 4: Pipelines were ranked based on optimized accuracy using cross-validation.



Step 5: Visualized the relationship map showing connections between the dataset, algorithms, and transformers.



Step 6: After completing the experiment, input data was provided to the best-performing pipeline for prediction.

au-syd.dai.cloud.ibm.com/ml-runtime/deployments/f5370544-d306-4eb0-a748-1d2ea55f8d7b/test?space_id=30461143-0ad1-4966-bc27-bb0d80a11fa6...

IBM watsonx.ai Studio

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Power_System_Fault_Detection_Deploy Deployed Online

API reference **Test**

Enter input data

Text **JSON**

Enter data manually or use a CSV file to populate the spreadsheet. Max file size is 50 MB.

[Download CSV template](#) [Browse local files](#) [Search in space](#) [Clear all](#)

	Fault ID (other)	Fault Location (Latitude, Longitude) (other)	Voltage (V) (double)	Current (A) (double)	Power Load (MW) (double)	Temperature (°C) (double)	Wind Speed (km/h) (double)	Weather Condition (other)
1	F004	(34.055, -118.242)	2050	240	48	23	10	clear
2	F008	(34.2294, -118.2988)	2133	229	52	20	18	snowy
3	F015	(34.2256, -118.9178)	1848	231	49	39	13	rainy
4	F025	(34.8937, -118.532)	1869	218	45	22	18	thunderstorm
5	F026	(34.9593, -118.9408)	2016	197	47	35	15	rainy
6								
7								
8								
9								

5 rows, 12 columns

Predict

Step 7: The system successfully predicted the **Fault Type** based on the input data using the trained model.

au-syd.dai.cloud.ibm.com/ml-runtime/deployments/f5370544-d306-4eb0-a748-1d2ea55f8d7b/test?space_id=30461143-0ad1-4966-bc27-bb0d80a11fa6...

IBM watsonx.ai Studio

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Power_System_Fault_Detection_Deploy **Prediction results**

Prediction type: **Multiclass classification**

Display format for prediction results: ☒ Table view ☐ JSON view ☐ Show input data

Prediction percentage: 5 records

Confidence level distribution

	Prediction	Confidence
1	Line Breakage	54%
2	Transformer Failure	47%
3	Line Breakage	42%
4	Line Breakage	35%
5	Transformer Failure	36%
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Download JSON file