

IBM PROJECT

POWER SYSTEM FAULT DETECTION AND CLASSIFICATION USING MACHINE LEARNING

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OUTLINE

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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..

MY SOLUTION

I constructed a machine learning model for recognition and classification of power system events using voltage and current phasor data.

I carried out data preprocessing, model training, and performance evaluation with Random Forest Models in IBM Watson Studio.

The dataset included normal fault types.

Real-time predictions were made once the model was trained and deployed using IBM Watson Machine Learning.

The data was stored in IBM Watson Cloud Object Storage .

IBM CLOUD SERVICES USED

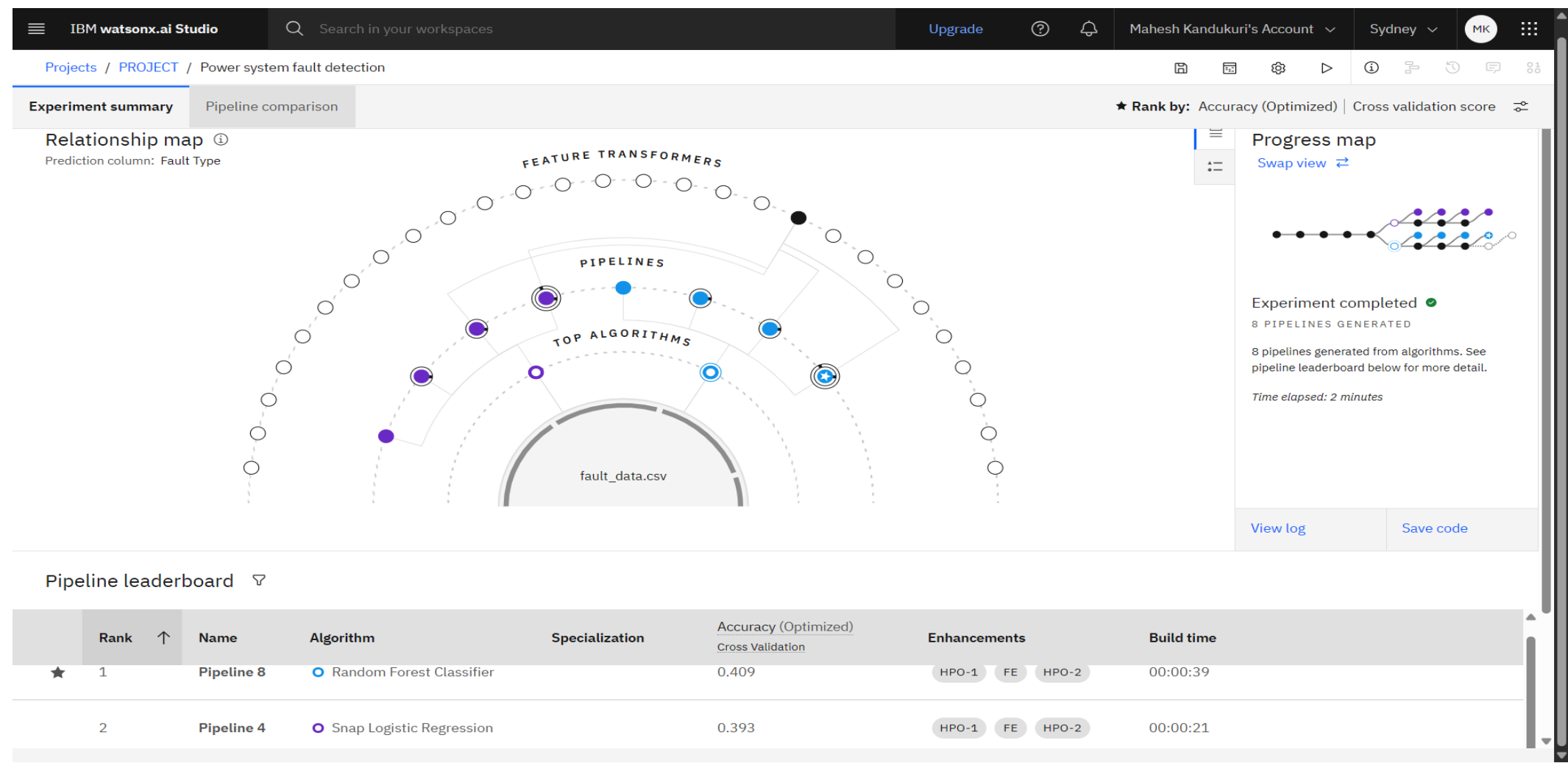
- IBM Watsonx AI Studio
- IBM Cloud object storage
- IBM watson machine learning

ALGORITHM AND DEPLOYMENT

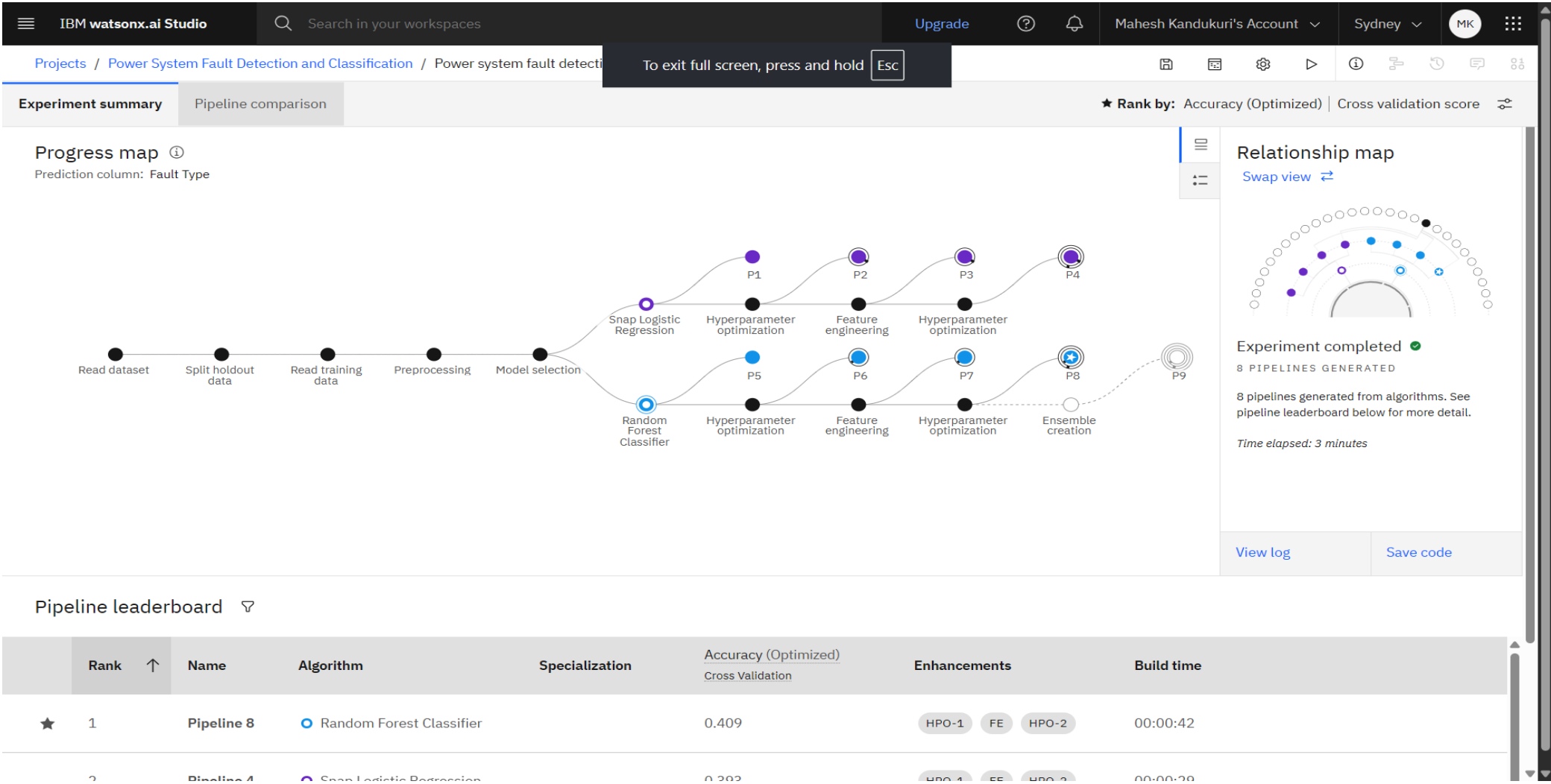
Random Forest Classifier

- Used as supervised learned model for classifying the fault type.
- Uses as input the features of the system such as the voltage/current magnitudes, phase angles, and sequence components.
- This model was selected due to its high accuracy, resilience to noisy data, and its performance in multi-class classification tasks

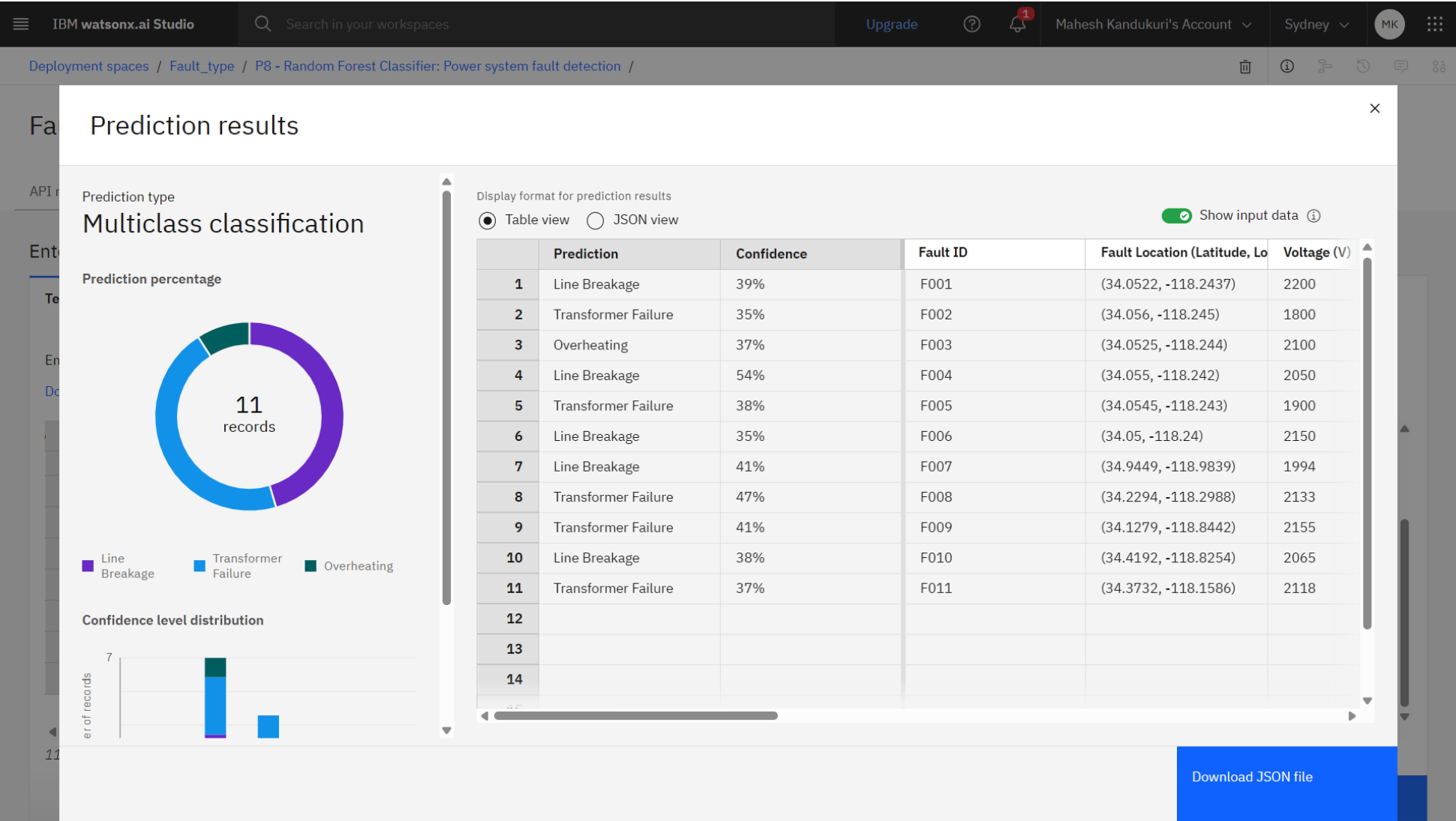
RESULTS



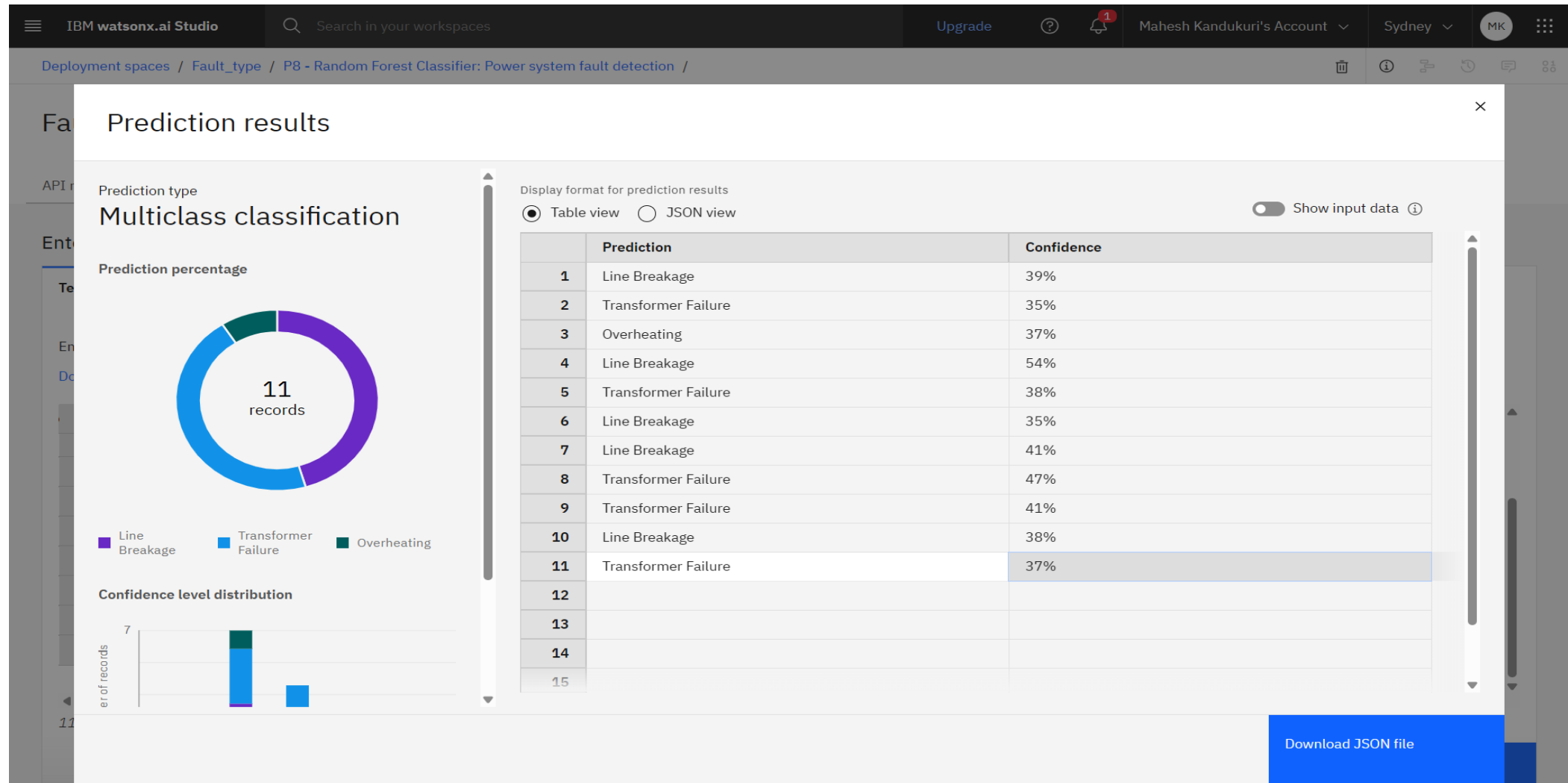
RESULTS



RESULTS



RESULTS



CONCLUSION

- A machine learning model was built to detect and classify power system faults using voltage and current data.
- IBM Cloud services like Watson Studio and Watson Machine Learning were used for model training and deployment.
- The solution enables fast and accurate fault identification, improving grid reliability and response time.

GITHUB LINK

- Make sure that there should be readme file

<https://github.com/2300080347M/-Power-System-Fault-Detection-and-Classification-using-ML>

IBM CERTIFICATIONS

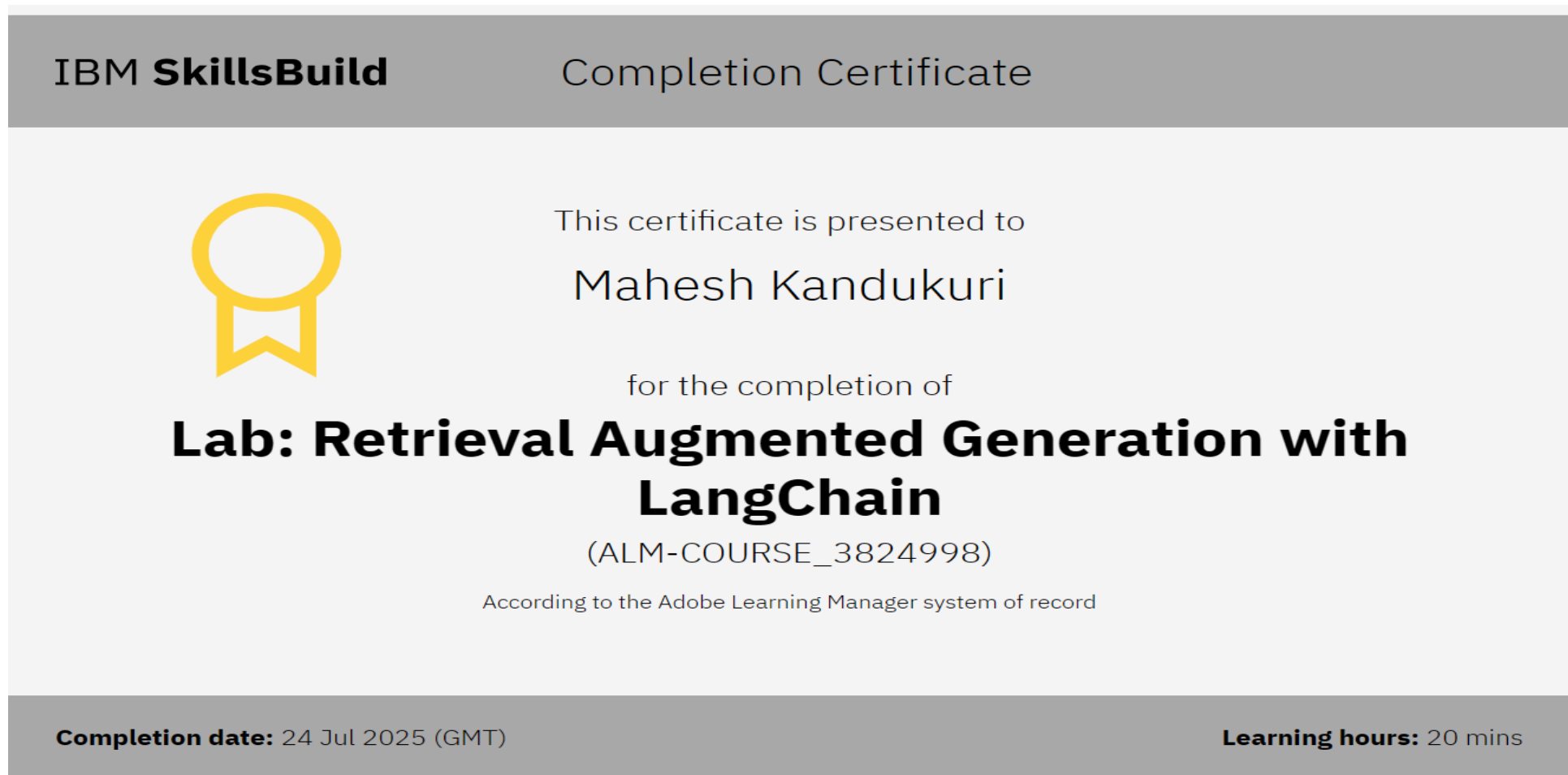
Screenshot/ credly certificate(getting started with AI)



Screenshot/ credly certificate(journey to cloud)



Attach your RAG LAB certificate here





THANK YOU