CAPSTONE PROJECT

PREDICTING ELIGIBILITY FOR NSAP SCHEMES USING MACHINE LEARNING

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

Develop a robust multi-class classification model using Machine Learning to predict the most appropriate National Social Assistance Program (NSAP) scheme for eligible individuals based on their demographic and socio-economic profiles. The objective is to streamline and automate the identification process to ensure timely and accurate disbursement of financial assistance to the right beneficiaries.

PROPOSED SOLUTION

- To address the challenge of accurately assigning the right NSAP scheme to applicants, we propose a machine learning-based system that automates the classification process using demographic and socio-economic data. This system will help streamline decision-making and ensure timely financial support to deserving individuals.
- **Key components :**

- **Data Collection:**
  Extract applicant data from AI_KOSH datasets, including attributes like age, income, marital status, disability, etc.
- **Data Processing:**
  Clean missing entries, encode categorical features, and normalize numerical values to prepare data for modeling.
- **Machine Learning Algorithm:**
  Train a multi-class classification model using algorithms such as Random Forest, XGBoost, or Support Vector Machines to classify applicants into the correct NSAP scheme.
- **Model Evaluation:**
  Evaluate model performance using metrics like accuracy, precision, recall, and F1-score to ensure fair and accurate predictions.
- **Deployment:**
  Deploy the model through a user-friendly web interface or API, enabling government staff to input data and receive instant eligibility suggestions.

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the to predicting eligibility for NSAP schemes. Here's a suggested structure for this section:

- System requirements:

  IBM Cloud(mandatory)

  IBM Watson studio for model development and deployment

  IBM cloud object storage for dataset handling

ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**

  Use a multi-class classification algorithm such as Random Forest, XGBoost, or Support Vector Machine for accurate scheme prediction..

- **Data Input :**

  Voltage, current, and phasor measurements from the dataset.

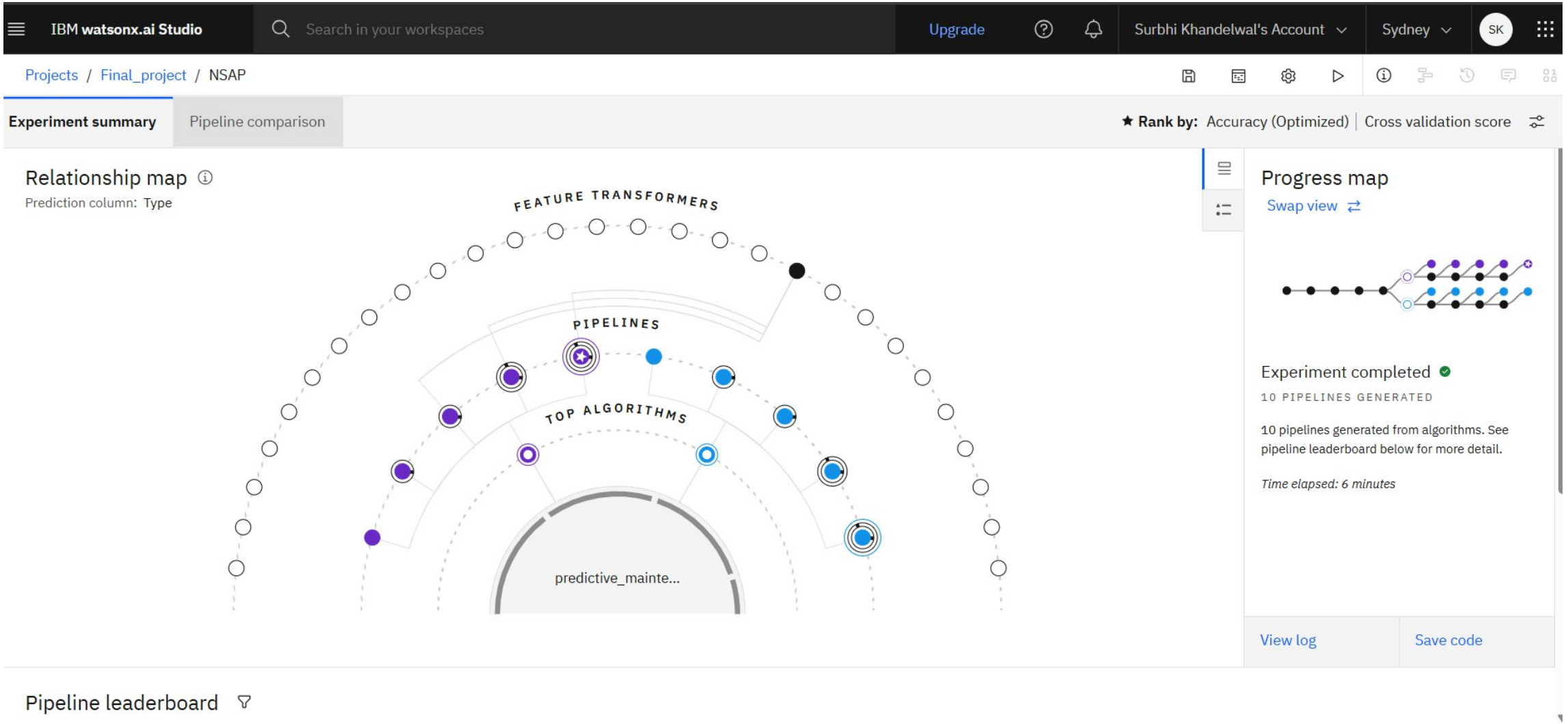
- **Training Process:**

  Supervised learning using labelled Type

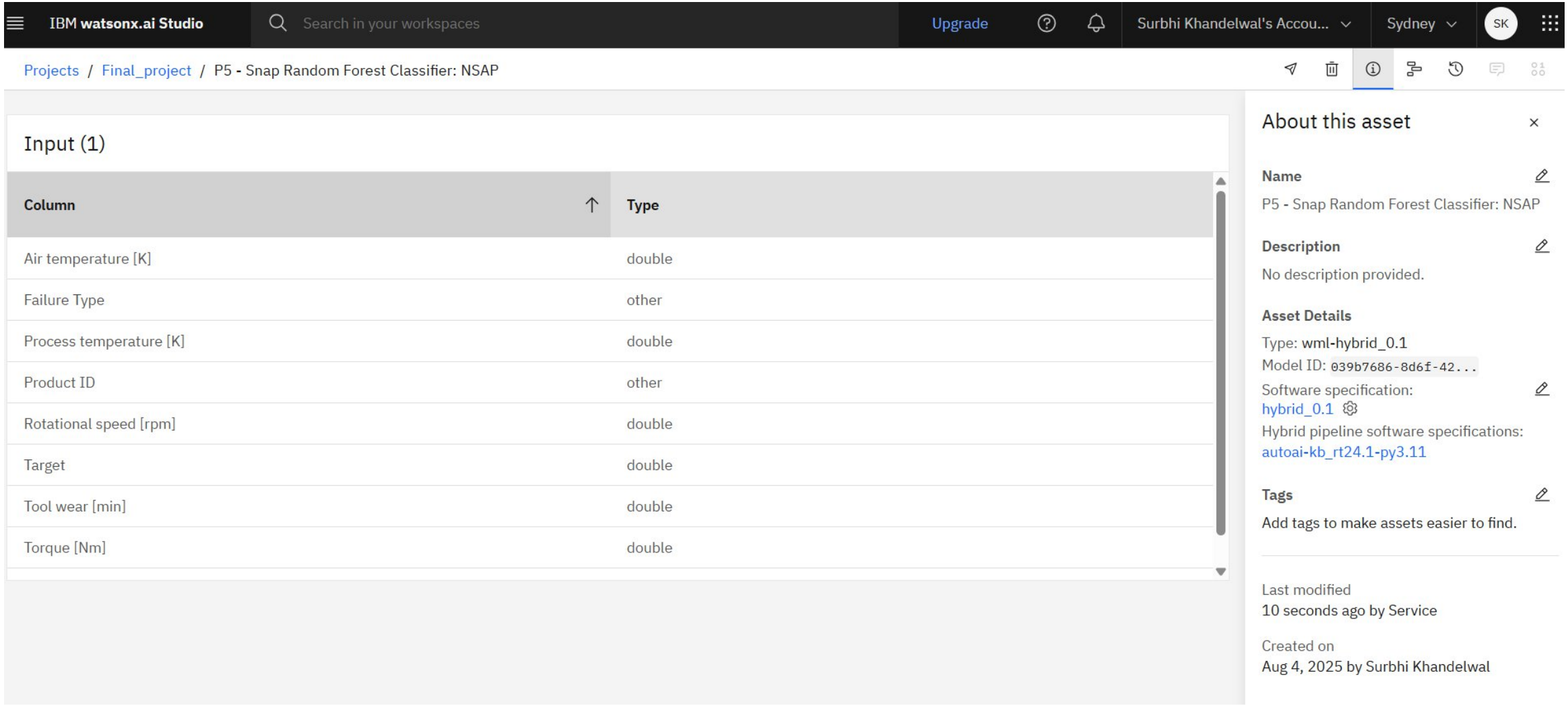
- **Prediction Process:**

  Model deployed on IBM Watson Studio with API endpoint for real-time predictions

RESULT



RESULT



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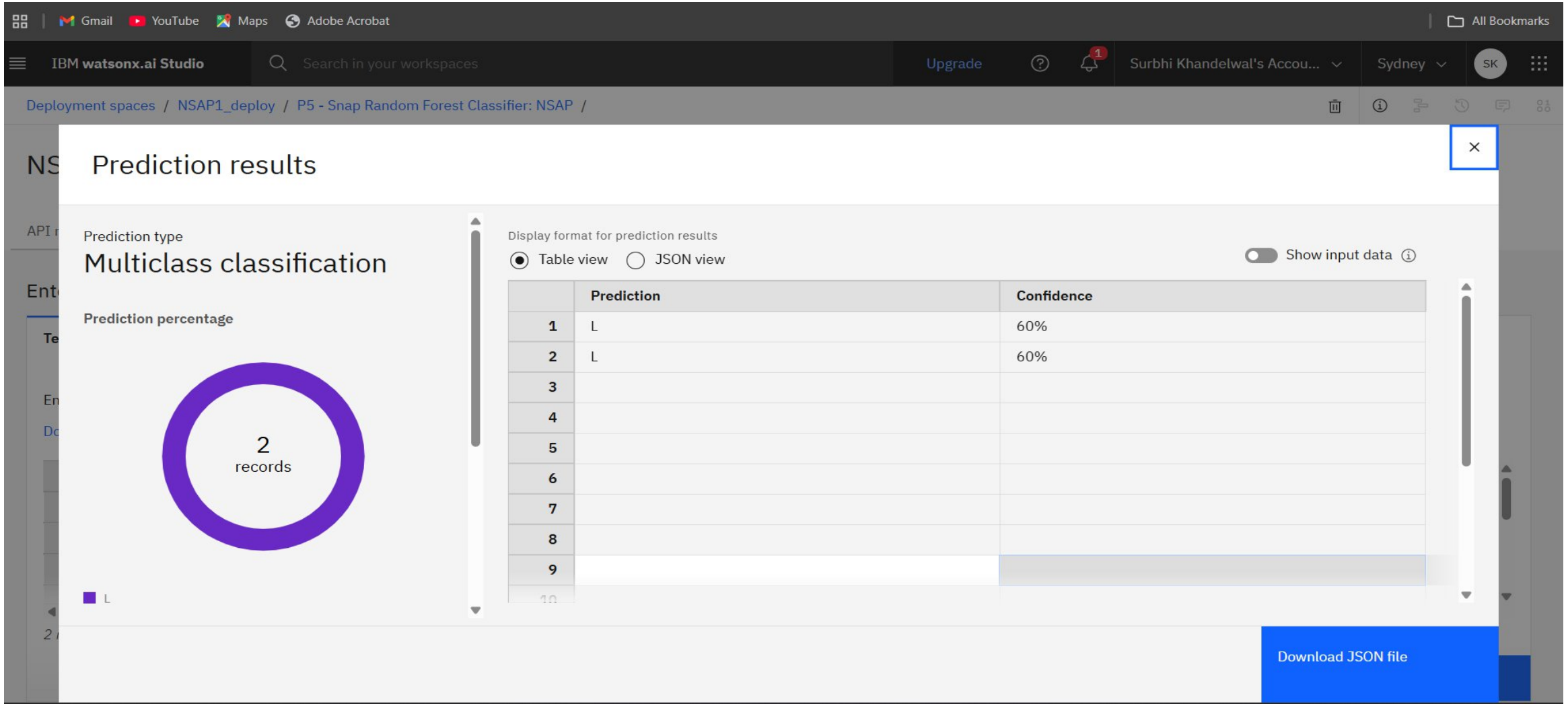
RESULT



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CONCLUSION

- By using machine learning, we can create an accurate and efficient system to predict which NSAP scheme a person is eligible for based on their background details. This solution will save time, reduce manual errors, and help ensure that financial support reaches the right people quickly and fairly. It will assist the government in making better decisions and improving the delivery of welfare services.

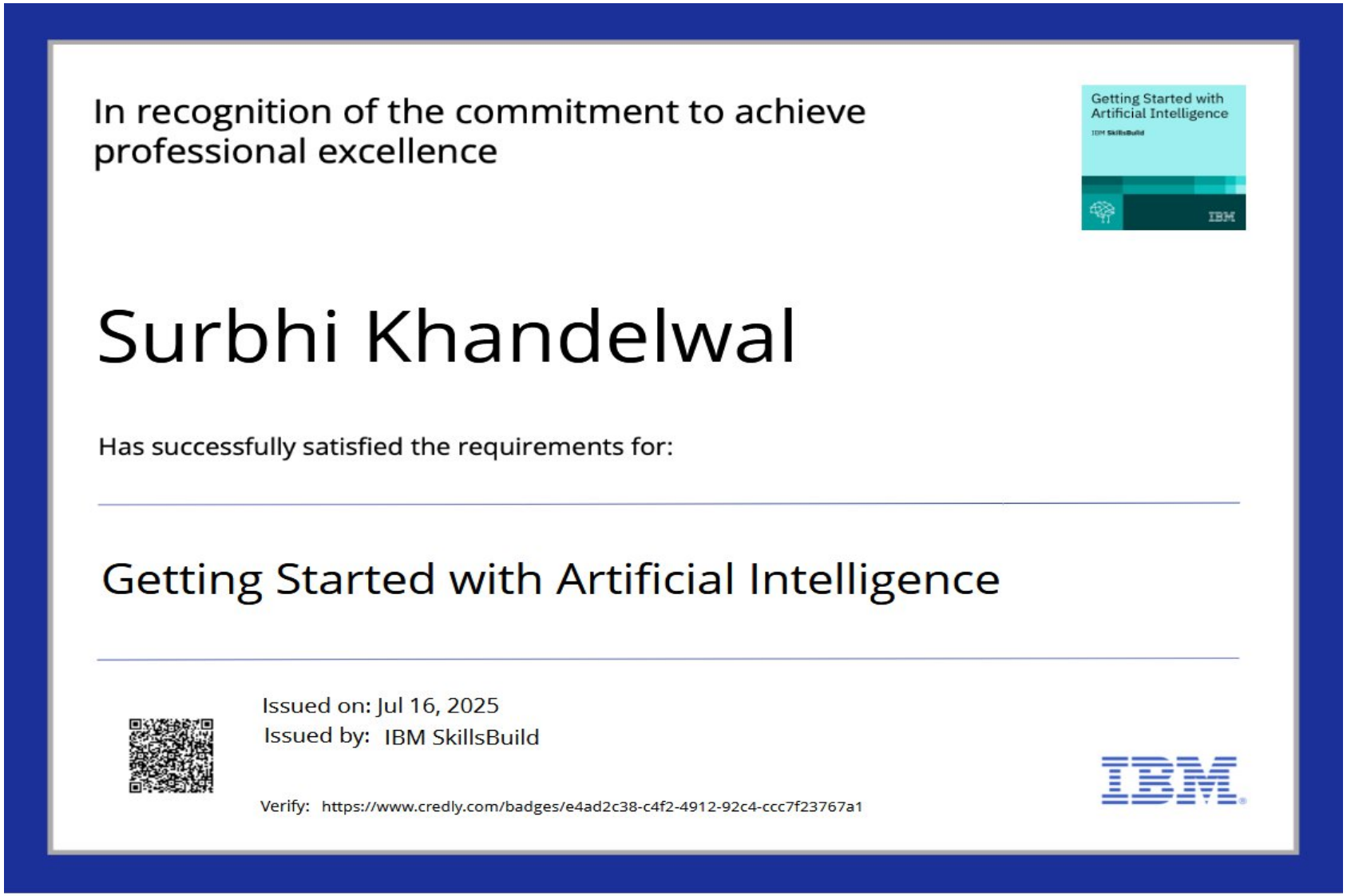
FUTURE SCOPE

- In the future, this machine learning-based eligibility prediction system can be extended to cover more welfare schemes beyond NSAP, making it a universal tool for social benefit distribution. As more data becomes available, the model can continuously learn and improve its accuracy over time. It can also be linked with national databases like Aadhaar or ration cards to automate and speed up the verification process.

REFERENCES

- This problem is based on the **AI_KOSH dataset**, which contains structured socio-economic and demographic data provided for machine learning challenges focused on public welfare schemes. The problem specifically refers to the **National Social Assistance Program (NSAP)** — a key welfare initiative launched by the **Government of India** to support **elderly citizens, widows, and persons with disabilities** living below the poverty line (BPL).

IBM CERTIFICATIONS



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