### **CAPSTONE PROJECT**

# MACHINE FAULT DIAGNOSIS AGENT

#### Presented By:

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### **OUTLINE**

- Problem Statement
- Proposed System
- System Development Approach
- Result
- Conclusion
- Future Scope
- References



## PROBLEM STATEMENT

Problem Statement No. 33 – Machine Fault Diagnosis
 Agent

This agent helps detect faults in machines like lathes, mills, or pumps based on vibrations, temperature, or unusual noises. It can answer: "Why is my CNC machine vibrating too much?" or "What could cause overheating in a hydraulic pump?". It suggests basic maintenance actions and safety precautions.



# PROPOSED SYSTEM

- STEPS TO CREATE AI AGENT:: --
- --First we log into the IBM Cloud and clear all the resources like storage etc.
- --Then we go to the navigation menu where we select the watsonx service and from there we select the Watson.ai option.
- --There we select the Al Agent >> --Al lab(Beta)>> --watsonx.ai home page.
- -- Scroll down and go to new project and add details.
- -- Associate watsonx.ai studio and watsonx.ai runtime service.
- --Again go to watsonx.ai home page and go to the Al AGENT option.
- --Here we can give our agent the tools and instruction.
- ❖ DEPLOYMENT OF THE AI AGENT::--
- -- After the model creation use
- --Click on the deploy button at right top corner and create a deployment space
- --After this deploy the project
- --We can now preview our project and ask the agent questions



# PROPOSED SYSTEM

- The proposed system aims to build an agent that can answer the quieries related to the faults in a particular machine. The solution will consist of the following components:
- SERVICES USED:
- --We will use watsonx.ai service to create an agent that can help in MACHINE FAULT DIAGNOSIS.
- --We can use tools for our assistant like GOOGLESEARCH, WIKIPEDIA etc to gather information about particular machine fault.
- ARCHITECTURE USED:
- --ReAct
- FRAMEWORK USED:
- --LangGraph
- MODEL:

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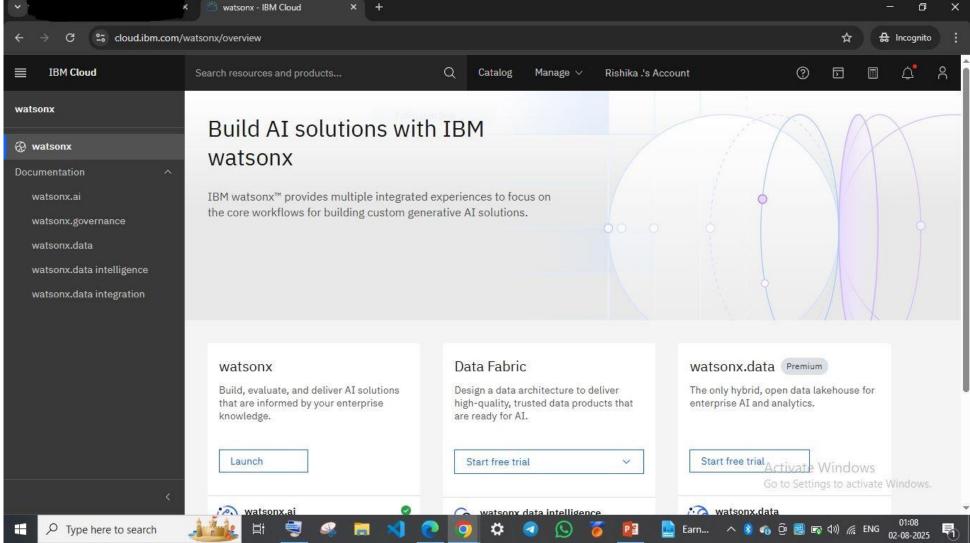
- DATA:
- --The Agent will get input about Machine fault from user and the agent uses tools to give information about fault.



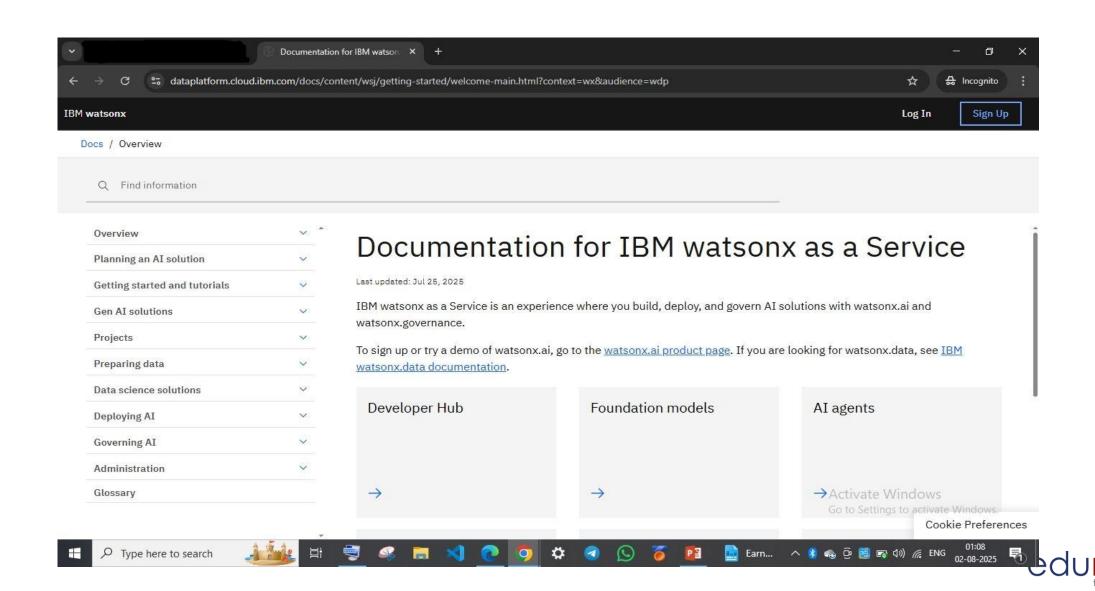
# **SYSTEM APPROACH**

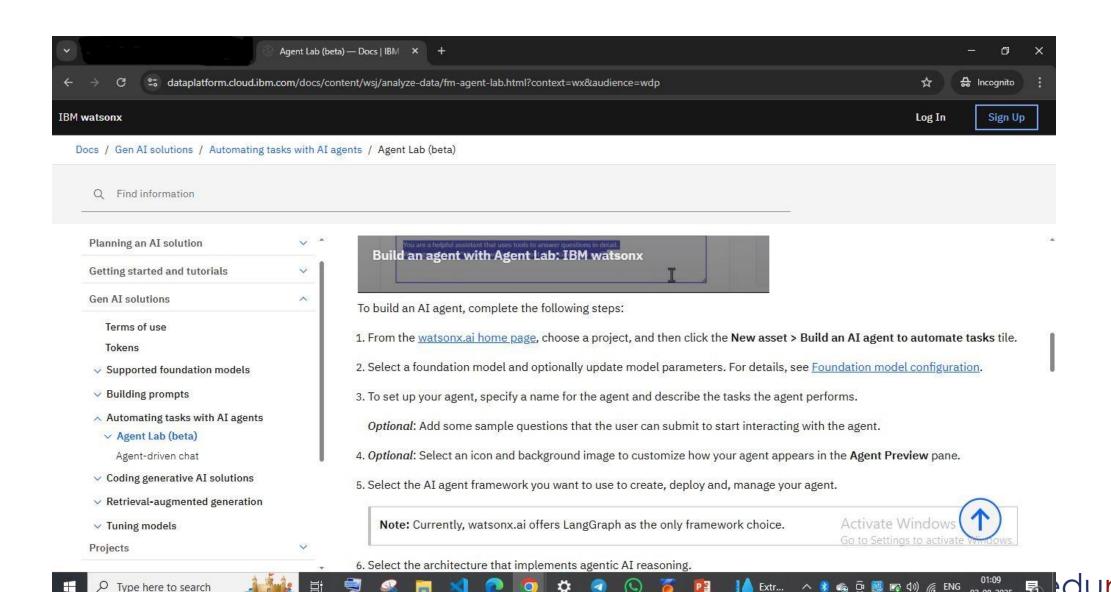
- The following services were used for the creation of the Machine Fault Diagnosis Agent:
- IBM Cloud Lite services
- IBM Granite Al model
- Watsonx.ai service



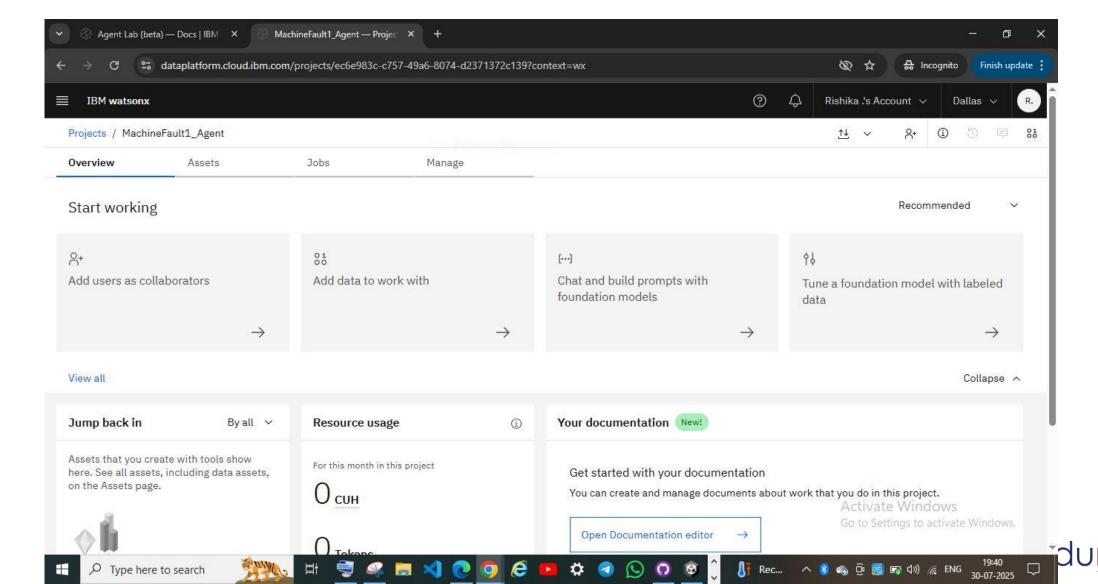




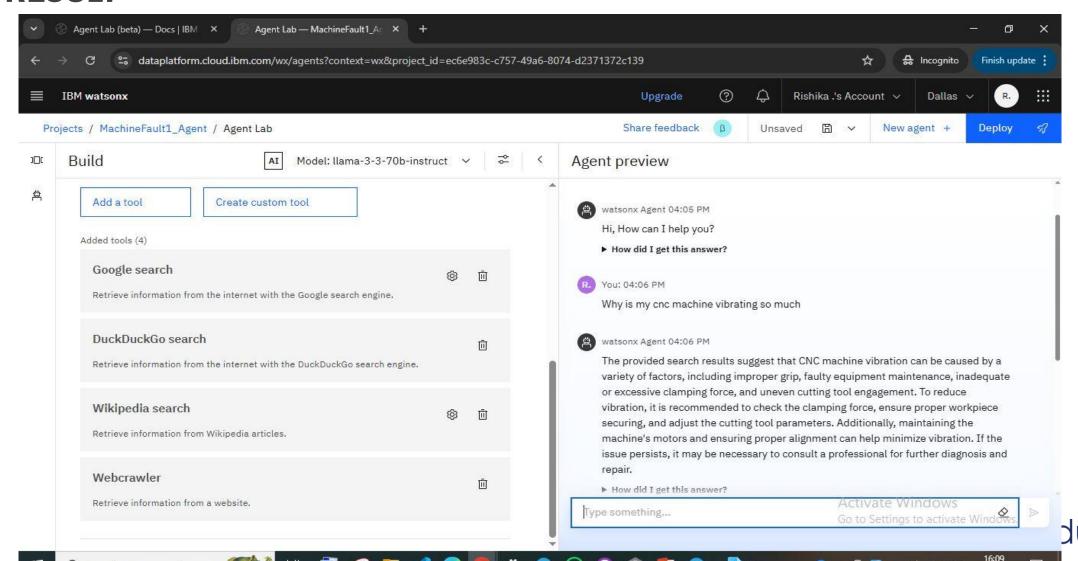




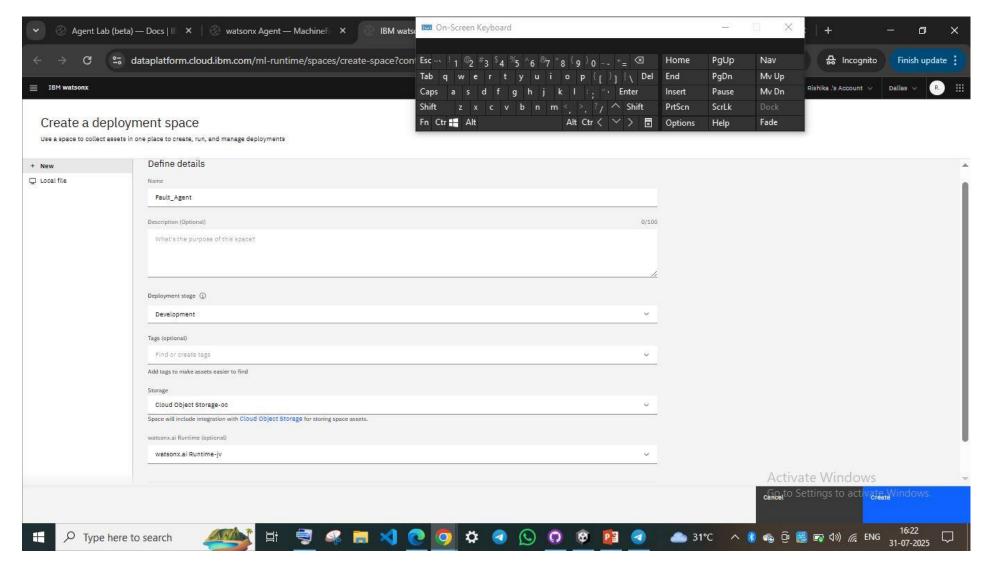
### PROJECT MACHINEFAULT1\_AGENT



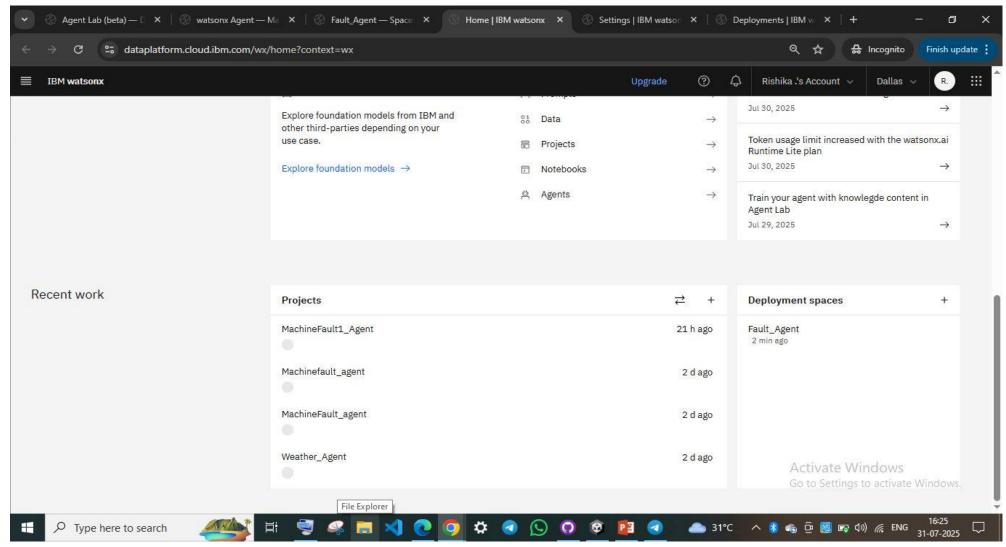
# THIS IS THE PREVIEW OF MACHINEFAULT AGENT BEFORE DEPLOYMENT RESULT



### **DEPLOYMENT SPACE CREATION**

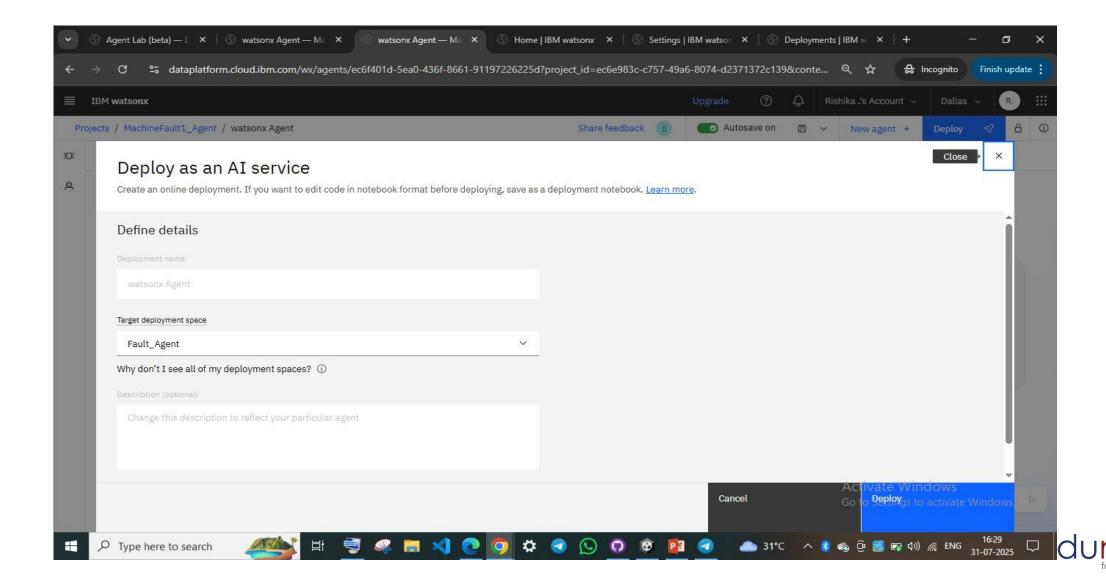




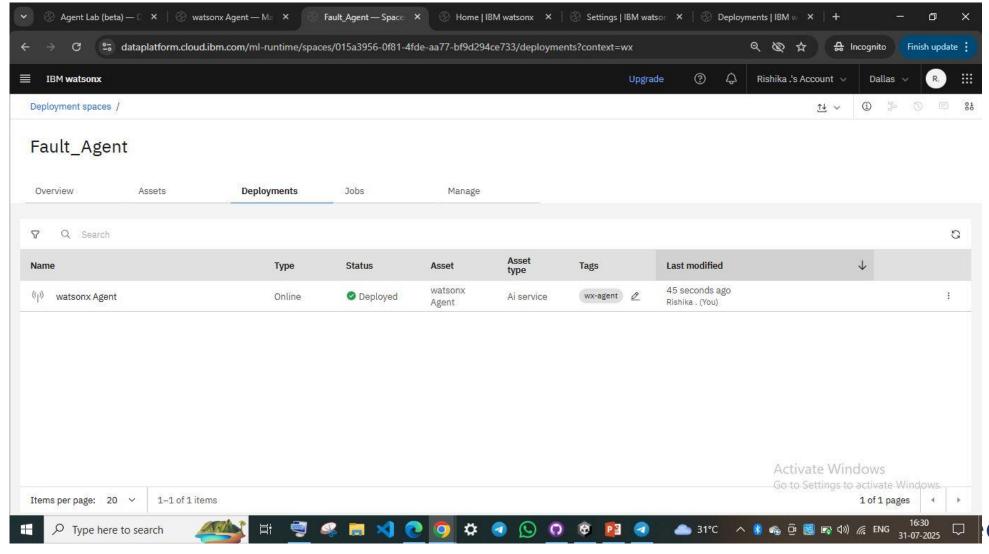




#### **DEPLOYING THE AGENT**

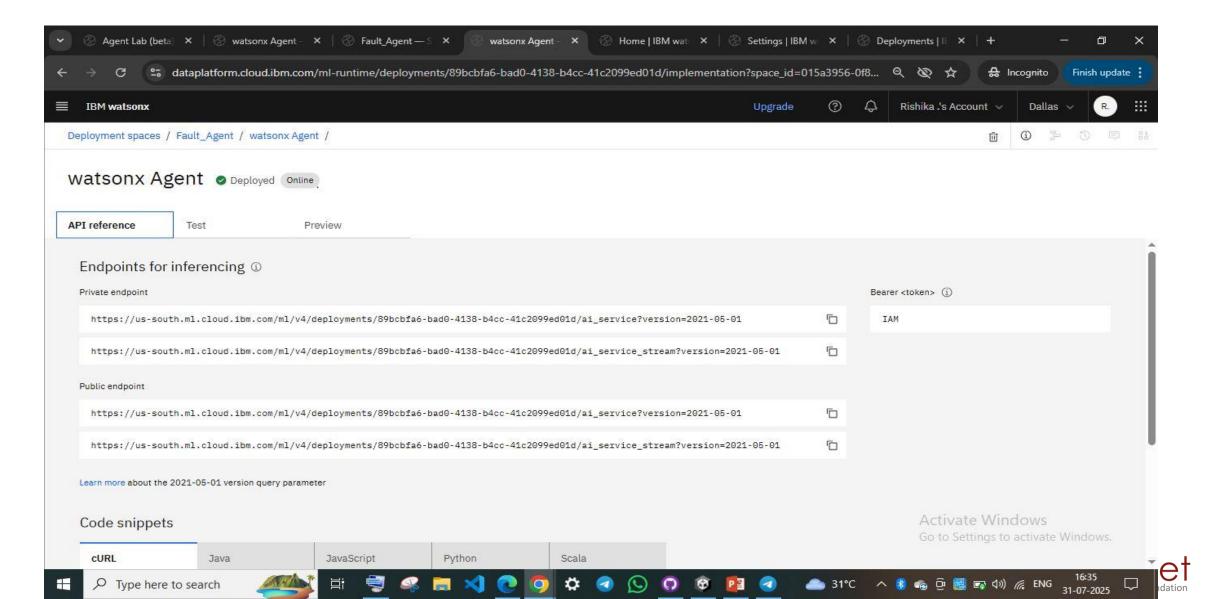


### **AGENT DEPLOYED**

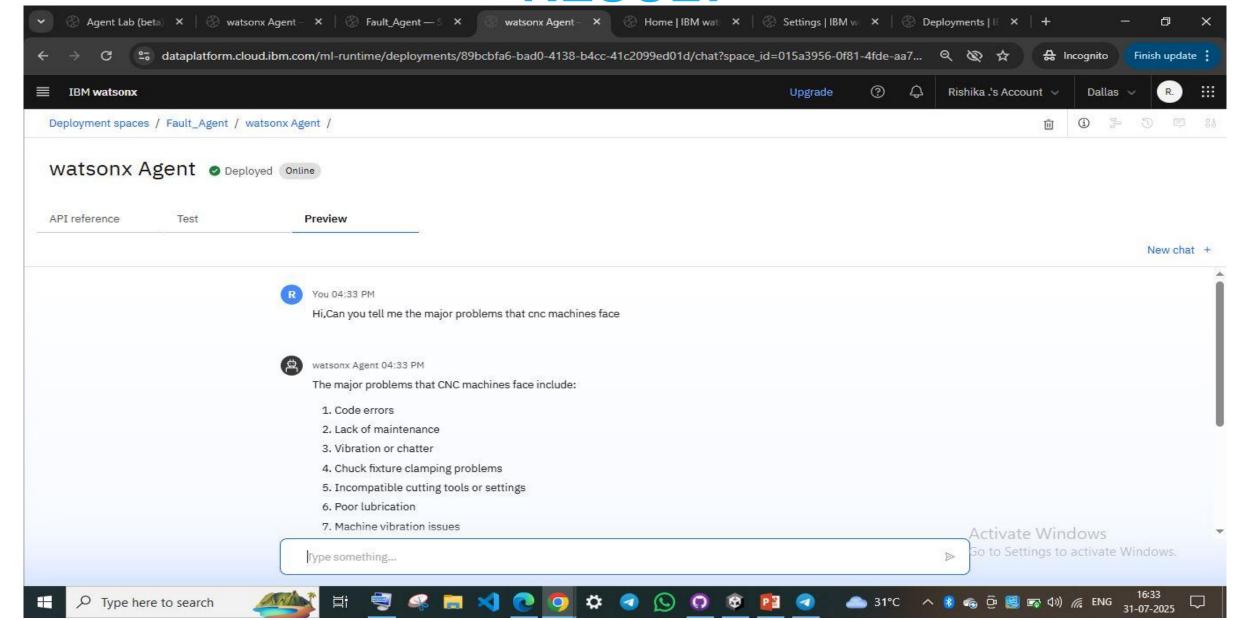




# **RESULT**



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# CONCLUSION

The Machine Fault Diagnosis Agent has the ability to detect and diagnose faults in industrial machinery such as lathes, mills and pumps by analyzing key factors like vibrations, unusual noises etc. It enhances efficiency by offering clear answers to specific fault related questions and gives basic maintenance steps and safety measures. This project can have problems due to insufficient data about fault which can lead to wrong information and steps against a particular fault, for improvement we can used IOT or real time monitoring with this project so we can get the actual fault that is happening in the particular machine



### **FUTURE SCOPE**

The future scope of the Machine Fault Diagnosis Agent includes expanding its capabilities into self maintenance by integrating real time sensor data and machine learning for early fault detection. It can evolve to support voice commands and visual input for a more intuitive user experience(LVM).



# REFERENCES

- IBM Cloud
- Watsonx.ai
- Google Search
- DuckDuck Go
- Wikipedia
- WebCrawler



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According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins



### **THANK YOU**

