
IBM HACKATHON PROJECT

AI-DRIVEN PLAGIARISM INTELLIGENCE FOR ASSIGNMENTS

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PROBLEM STATEMENT

❑ The Challenge :

Academic institutions face increasing difficulty in detecting nuanced forms of plagiarism, especially when assignments are paraphrased or generated by AI tools. Current plagiarism detectors lack contextual sensitivity to instructor-specific styles and grading patterns. The challenge lies in creating an adaptive AI system that learns from historical assignment submissions and instructor feedback to identify inconsistencies and potential misconduct dynamically. This would enhance academic integrity by flagging suspicious entries with improved accuracy and contextual awareness.

❑ Proposed Solution :

The proposed solution is to build an AI-powered plagiarism detection system using IBM Watson Studio and Granite that detects copied, paraphrased, or AI-generated content by analyzing semantic similarity and learning from instructor feedback. It will use IBM Cloud Object Storage for data, deploy models via Watson Machine Learning, and offer a simple interface for assignment uploads and detailed plagiarism reports.

TECHNOLOGY USED

- ❑ **IBM Cloud Lite Services** - A free-tier platform by IBM to build, test, and deploy cloud-based applications using limited resources.
- ❑ **Natural Language Processing (NLP)** - A branch of AI that enables machines to understand, interpret, and generate human language.
- ❑ **Retrieval-Augmented Generation (RAG)** - An AI technique that enhances response generation by retrieving relevant external documents or data.
- ❑ **Agentic AI** - AI systems capable of autonomous goal-driven behavior, making decisions and taking actions with minimal human input.
- ❑ **IBM Granite Model** - IBM's family of large language models (LLMs) designed for advanced text understanding, generation, and enterprise AI tasks.

IBM CLOUD SERVICES USED

- ❑ **IBM Watsonx.ai studio** – For building and training the AI and ML models.
- ❑ **IBM Granite** – For semantic analysis and AI-generated text detection.
- ❑ **IBM Cloud Object Storage** – To store assignment data and historical records.
- ❑ **IBM Watson Machine Learning** – For deploying and managing trained models.
- ❑ **IBM Cloud Functions** – To host APIs for model inference.
- ❑ **IBM Cloud Foundry** – For building a web interface or dashboard.

WOW FACTORS

- ❑ This agent will enhance **academic integrity** by detecting nuanced plagiarism, paraphrasing, and AI-generated content, while adapting to instructor-specific feedback and writing patterns.
- ❑ It will empower educators with **intelligent, context-aware tools to ensure fairness, accuracy, and accountability** in assignment evaluation.
- ❑ **Unique features:**
 - ❑ Contextual plagiarism detection using semantic similarity and AI text recognition
 - ❑ Instructor-specific learning for personalized feedback sensitivity
 - ❑ Identification of AI-generated content and paraphrased submissions
 - ❑ Dynamic flagging system with confidence scoring and highlighted segments
 - ❑ Historical assignment comparison for deeper analysis and traceability
 - ❑ Lightweight dashboard or chatbot for real-time assignment evaluation

END USERS

- ☐ Faculty Members and Educators
- ☐ Academic Institutions and Universities
- ☐ Examination and Evaluation Committees
- ☐ Students (for self-assessment and learning support)
- ☐ Learning Management System (LMS) Providers and EdTech Platforms

RESULTS

The screenshot displays the IBM watsonx Agent Lab interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user's account 'Akshita Ravikumar's Account', the location 'London', and a profile icon 'AR'. Below the navigation bar, the breadcrumb trail shows 'Projects / Agentic_AI / Agent Lab'. The main interface is divided into two panels. The left panel, titled 'Build', contains configuration options for the agent. It includes a 'Framework' dropdown set to 'LangGraph', an 'Architecture' dropdown set to 'ReAct', and an 'Instructions' text area with the prompt: 'You are a helpful assistant that uses tools to answer questions in detail. When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"'. There is also a 'Knowledge' section with a 'Vector index' dropdown set to 'SAP_assignment_2' and a 'Clear chat' button. The right panel, titled 'Agent preview', shows a chat history. The first message is from 'You' at 12:04 PM: 'What are main points in this assignment?'. The second message is from 'watsonx Agent' at 12:04 PM: 'The main points in this assignment are:'. Below this, the agent's response is structured into two parts: '1. Assignment Structure:' followed by a bulleted list of requirements, and '2. Course Objective:'. At the bottom of the chat preview is a text input field with the placeholder 'Type something...' and a send button.

IBM watsonx

Upgrade ? 🔔 Akshita Ravikumar's Account London AR

Projects / Agentic_AI / Agent Lab

Share feedback β Unsaved New agent + Deploy

Build AI Model: mistral-large ⚠️

Framework: LangGraph Architecture: ReAct

Instructions: [Advanced configuration](#)

You are a helpful assistant that uses tools to answer questions in detail. When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"

Knowledge: Vector index: SAP_assignment_2 [Clear chat](#)

If you want to add a vector index to the agent, clear the agent preview chat.

Tools

Agent preview

AR You: 12:04 PM
What are main points in this assignment?

watsonx Agent 12:04 PM
The main points in this assignment are:

1. **Assignment Structure:**

- The assignment consists of 2 questions.
- Maximum marks are 25.
- The assignment should be neatly word processed and restricted to 12 pages.
- Submission date is 05 Jun 2025, with no late submissions permitted.
- All sources used must be properly referenced.

2. **Course Objective:**

Type something...

RESULTS

The screenshot shows the IBM watsonx console interface. The top navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, a help icon, a notification bell, the user's account 'Akshita Ravikumar's Account', the location 'London', and a profile icon 'AR'. The breadcrumb trail indicates the path: 'Deployment spaces / Deployments / watsonx Agent /'. The main content area is titled 'watsonx Agent' with status indicators 'Deployed' and 'Online'. Below this, there are three tabs: 'API reference' (selected), 'Test', and 'Preview'. The 'API reference' tab displays 'Endpoints for inferencing' with two sections: 'Private endpoint' and 'Public endpoint'. Each section contains a URL and a 'Bearer <token>' field with a dropdown menu currently set to 'IAM'. A link 'Learn more about the 2021-05-01 version query parameter' is provided. At the bottom, there is a 'Code snippets' section. On the right side, a sidebar titled 'About this deployment' contains fields for 'Name' (watsonx Agent), 'Description' (Change this description to reflect your particular agent), 'Deployment Details' (including ID, serving name, software specification 'runtime-24.1-py3.11', hardware specification 'Extra extra small: 1 CPU and 2 GB RAM', and copies '1'), 'Tags' (wx-agent), and 'Associated asset'.

This screenshot shows the same IBM watsonx console interface, but with the 'Preview' tab selected. The 'API reference' tab is now inactive. The main content area displays a 'Welcome to watsonx Agent' message with a 'New chat +' button. Below the message is a chat interface with a placeholder image showing a network diagram and a magnifying glass icon. A text input field at the bottom is labeled 'Type something...'. The right sidebar remains the same, showing deployment details for 'watsonx Agent'.

RESULTS

The screenshot shows the IBM watsonx Agent interface. At the top, the breadcrumb navigation reads "Deployment sp..." / "Deployme..." / "watsonx Ag...". The main header displays "watsonx Agent" with a green checkmark and "Deployed" status, and a grey pill labeled "Online". Below this is a tab bar with "API reference", "Test", and "Preview" (the active tab). A "New chat +" button is on the right. The chat history shows a user message at 01:10 PM: "What documents do you have?". The agent's response at 01:10 PM is: "I have the following documents:" followed by a bulleted list containing "SAP_assignment _2". Below the list is a link "► How did I get this answer?" and a refresh icon. At the bottom is a text input field with the placeholder "Type something..." and a send button.

This screenshot is similar to the first one but includes a tooltip. The breadcrumb navigation is "Deployment sp..." / "Deployme..." / "watsonx Ag...". The header shows "watsonx Agent" with a green checkmark and "Deployed" status, and a grey pill labeled "Online". The tab bar has "API reference", "Test", and "Preview" (active). A "New chat +" button is on the right. The chat history shows a user message at 01:11 PM: "Summarize the document in 10 lines.". The agent's response at 01:11 PM is: "The document is an assignment for a course on computer architecture, focusing on modern microprocessors. It consists of 2 questions with a maximum of 25 marks. The assignment must be neatly word processed, not exceeding 12 pages, and submitted by 05 Jun 2025. Late submissions are not permitted. All sources used must be properly referenced." followed by a paragraph: "The assignment covers topics such as the implementation of a FOR loop in Assembly Language and writing Assembly Language Code (x86, 32-bit NASM Style). It provides detailed instructions on creating a directory and file, writing the assembly code, and understanding the output of a C program. The document emphasizes the importance". A tooltip with the text "watsonx Agent" points to the agent's name in the chat history. At the bottom is a text input field with the placeholder "Type something..." and a send button.

RESULTS

watsonx Agent ✓ Deployed Online

<

API reference

Test

Preview


New chat +

of proper formatting and referencing.

A

You 01:12 PM


Whether the document is human generated or AI machine generated?



watsonx Agent 01:12 PM

The document is human-generated.

► How did I get this answer?




Type something...


►

IBM watsonx

Deployment sp... / Deployme... / watsonx Ag... /

?








AR


Deployment sp... / Deployme... / watsonx Ag... /

?









watsonx Agent ✓ Deployed Online

<

API reference


Test

Preview

New chat +

You 01:13 PM

how do you conclude that the document is human-generated?



watsonx Agent 01:13 PM

The document is human-generated because it contains specific instructions, formatting requirements, and submission details that are typically provided by a human instructor or examiner. Additionally, the document includes a signature line for the examiner and detailed guidelines for referencing sources, which are indicative of human oversight and evaluation. The content also discusses concepts and components of computer architecture, which are presented in a structured and educational manner, suggesting it was created by a human with expertise in the subject.

► How did I get this answer?

Type something...

►

RESULTS

IBM watsonx

Deployment sp... / Deploye... / watsonx Ag... /

watsonx Agent ✓ Deployed Online

< API reference

Test

Preview

New chat +

A You 01:15 PM

Whether the document has any AI generated content?

watsonx Agent 01:15 PM

The document does not explicitly mention any AI-generated content. It appears to be a human-created assignment for a course on computer architecture, focusing on modern microprocessors. The assignment includes instructions for students, a preamble, references, and a problem statement for developing an algorithm and assembly language code based on a given C program. The content and structure suggest it was authored by a human instructor or examiner.

► How did I get this answer?

Type something... ▶

IBM watsonx

Deployment sp... / Deploye... / watsonx Ag... /

watsonx Agent ✓ Deployed Online

< API reference

Test

Preview

New chat +

A You 01:16 PM

whether the answers in the document is correct?

watsonx Agent 01:16 PM

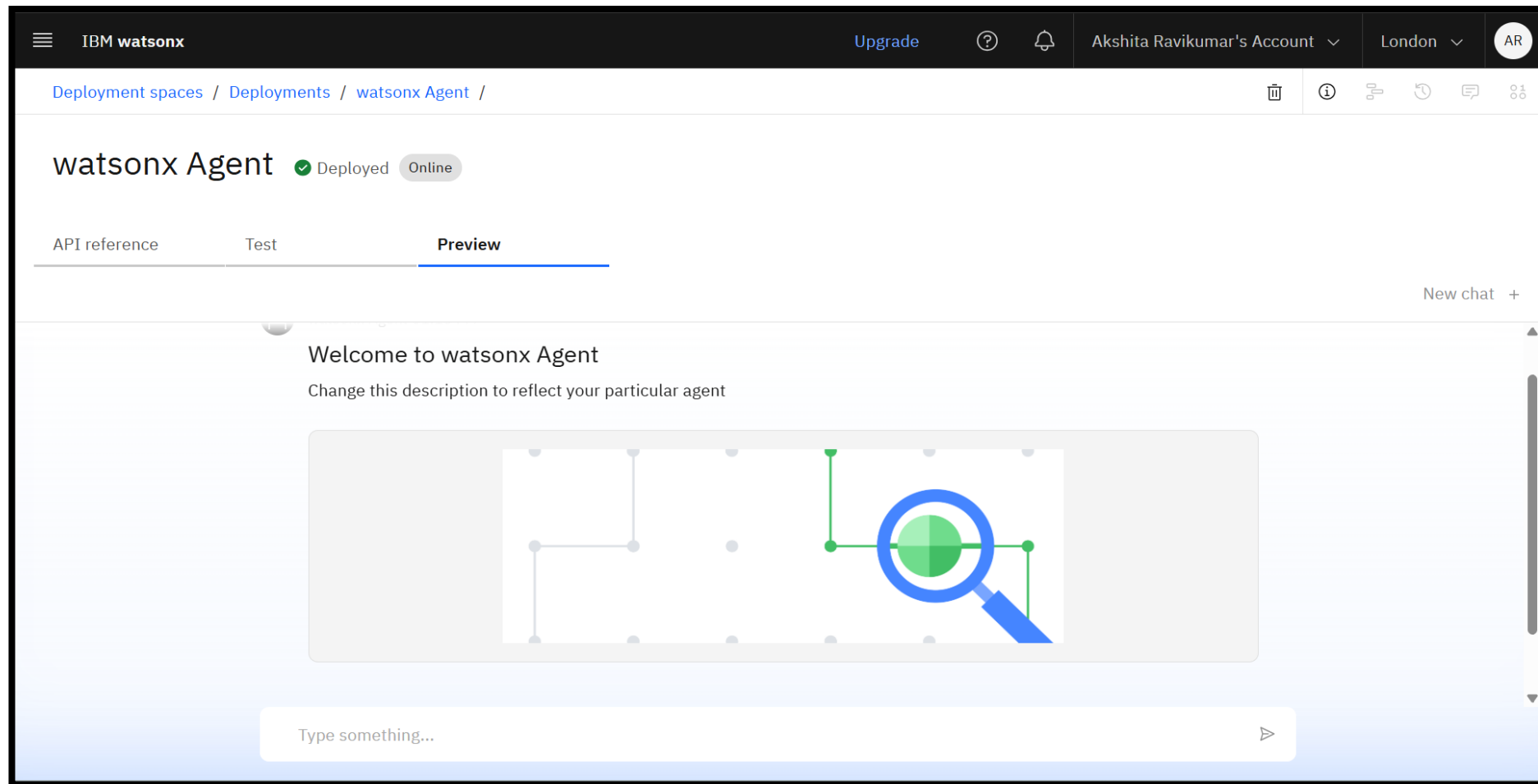
The document appears to be an assignment for a course on computer architecture, focusing on modern microprocessors. It includes instructions for students, a preamble, references, and a problem statement for developing an algorithm and assembly language code based on a given C program. The content and structure suggest it was authored by a human instructor or examiner.

The document does not explicitly mention any AI-generated content. The instructions, problem statement, and references are all consistent with what would be expected from a human-created educational assignment. Therefore, it is reasonable to conclude that the document is entirely human-generated.

Type something... ▶

RESULTS

Deployed AI Agent :



The screenshot displays the IBM watsonx Agent management interface. At the top, a dark navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, and user account information for 'Akshita Ravikumar'. The breadcrumb trail indicates the current location: 'Deployment spaces / Deployments / watsonx Agent'. The main header shows 'watsonx Agent' with a green checkmark for 'Deployed' and a grey 'Online' status badge. Below this, three tabs are visible: 'API reference', 'Test', and 'Preview', with the 'Preview' tab being the active selection. The chat area shows a 'Welcome to watsonx Agent' message and a prompt to 'Change this description to reflect your particular agent'. A diagram of a workflow with nodes and a magnifying glass icon is displayed. At the bottom, there is a text input field with the placeholder 'Type something...' and a send button.

CONCLUSION

- ❑ The **AI-Driven Plagiarism Intelligence** system offers an advanced solution to uphold academic integrity by detecting and analyzing potential plagiarism in student assignments.
- ❑ By leveraging Natural Language Processing (NLP), machine learning, and semantic similarity analysis, the system can detect rephrased, paraphrased, and intelligently disguised content.
- ❑ It significantly reduces the manual effort for educators, improves detection accuracy, and promotes originality among students.
- ❑ This tool not only streamlines plagiarism checking but also fosters ethical academic behavior and responsible content creation.

GITHUB LINK

- Make sure that there should be readme file
- GitHub Link : <https://github.com/Akshita21-09/AICTE-AI-and-Cloud-Internship-Project-AI-Driven-Plagiarism-Intelligence-for-Assignments.git>

FUTURE SCOPE

- ❑ Multilingual Plagiarism Detection
- ❑ Cross-platform Integration
- ❑ Deep Semantic Understanding
- ❑ Code Plagiarism Detection
- ❑ Blockchain for Academic Integrity
- ❑ Feedback and Learning Recommendations
- ❑ Dataset Expansion and Continuous Learning

IBM CERTIFICATIONS

- Screenshot/ credly certificate(getting started with AI)



Attach your RAG LAB certificate here





THANK YOU