CAPSTONE PROJECT

SEMANITCAAI – AI-POWERED PLAGIARISM DETECTION AGENT

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OUTLINE

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- Git-hub Link
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- IBM Certifications

PROBLEM STATEMENT

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:

SemanticaAI is a smart plagiarism detection assistant developed using IBM Watsonx and Granite LLM. Unlike typical tools, it catches semantic plagiarism by analyzing meaning, not just exact word matches. Users can interact naturally and get both plagiarism scores and rewrite suggestions — promoting ethical academic writing.

TECHNOLOGY USED

- IBM Cloud Lite Services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Watsonx AI Studio
- IBM Granite Foundation Model
- LangGraph & ReAct Architecture
- JSON-based prompt configuration

IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watson AI Runtime
- IBM Cloud Functions
- IBM Granite via Foundation Models
- IBM Cloud Object Storage (for text prompts/data)
- IBM Cloud Agent Lab

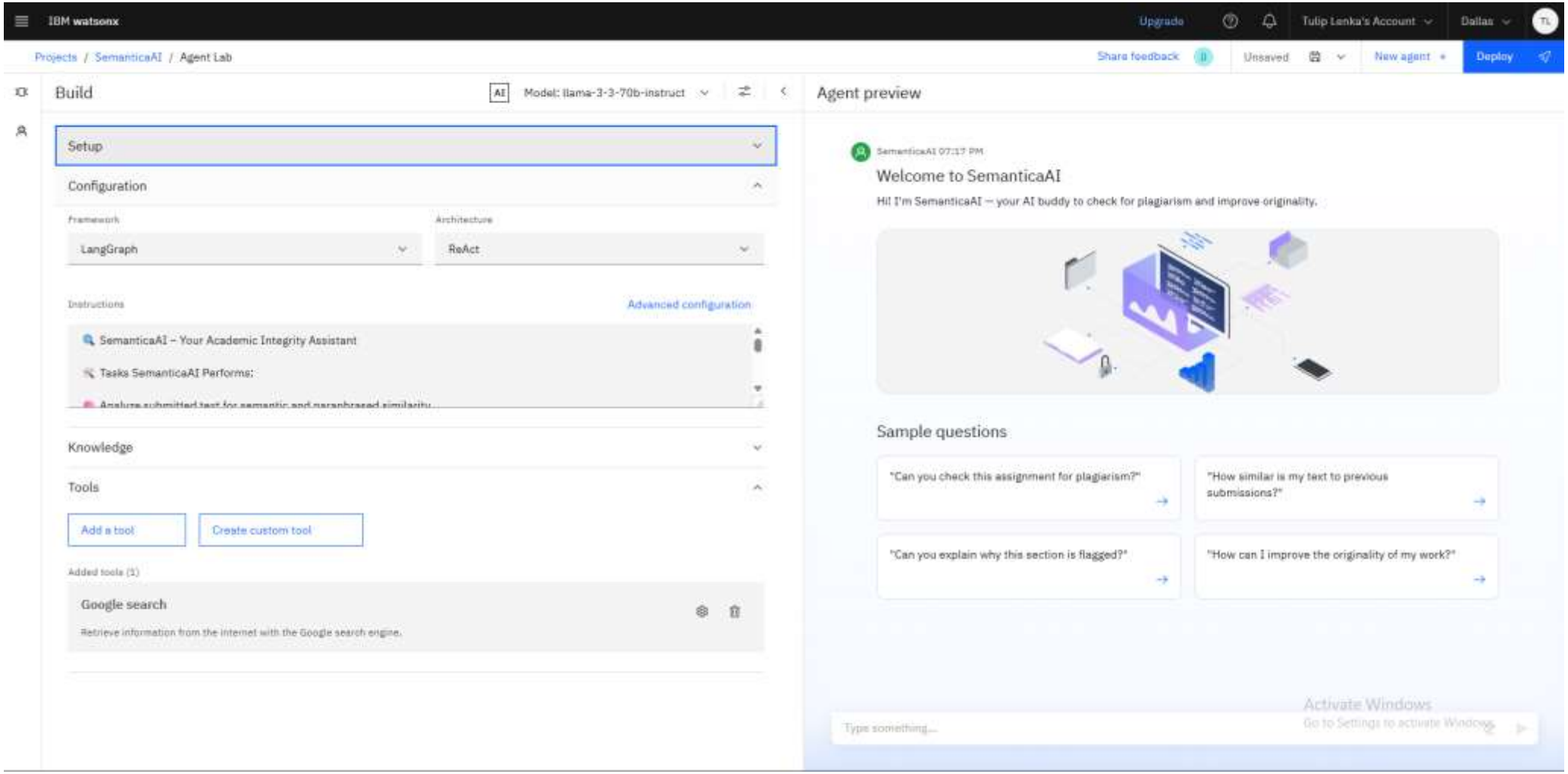
WOW FACTORS

- **Semantic Detection**: Goes beyond surface-level matching to detect plagiarism based on meaning, even if the content is rephrased or paraphrased cleverly.
- **Smart Flagging**: Highlights suspicious sections and explains *why* they might be plagiarized, offering users deeper understanding — not just red marks.
- **Rewriting Support**: Doesn't just point out plagiarism — helps users rephrase ideas in their own words to improve originality and writing skills.
- **Conversational Interface**: Powered by IBM Granite, users interact naturally with the agent, like talking to a smart AI tutor.
- **Education-Oriented**: Promotes ethical writing and originality — ideal for students, educators, and academic institutions aiming to reduce unintentional plagiarism.
- **Easy Cloud Integration**: Built entirely on IBM Cloud — scalable, secure, and easy to extend for real-world academic use cases.

END USERS

- College Students
- Research Scholars
- Content Writers
- Teachers and Academic Institutions
- Reviewers & Editors

RESULTS



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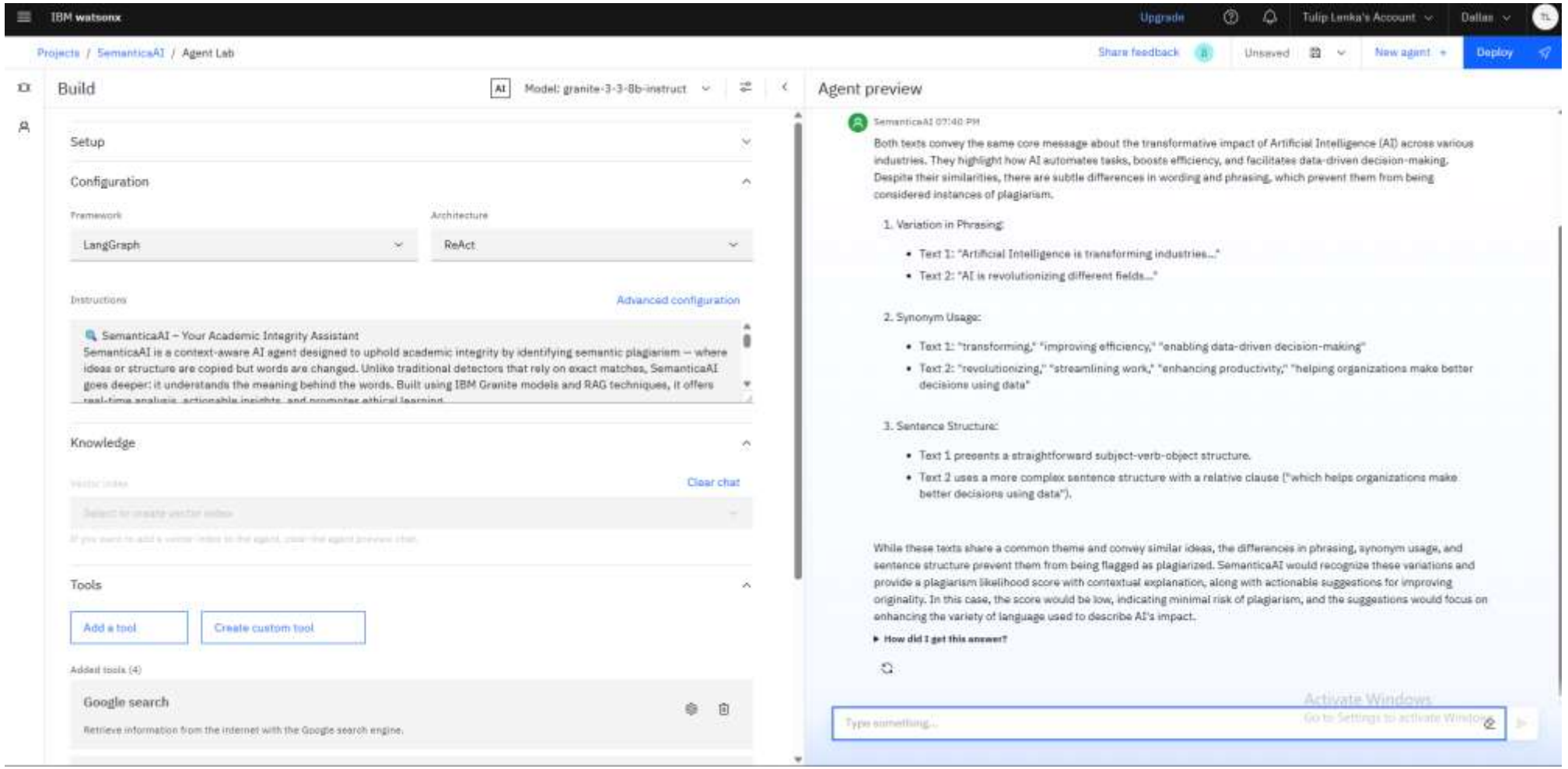
RESULTS



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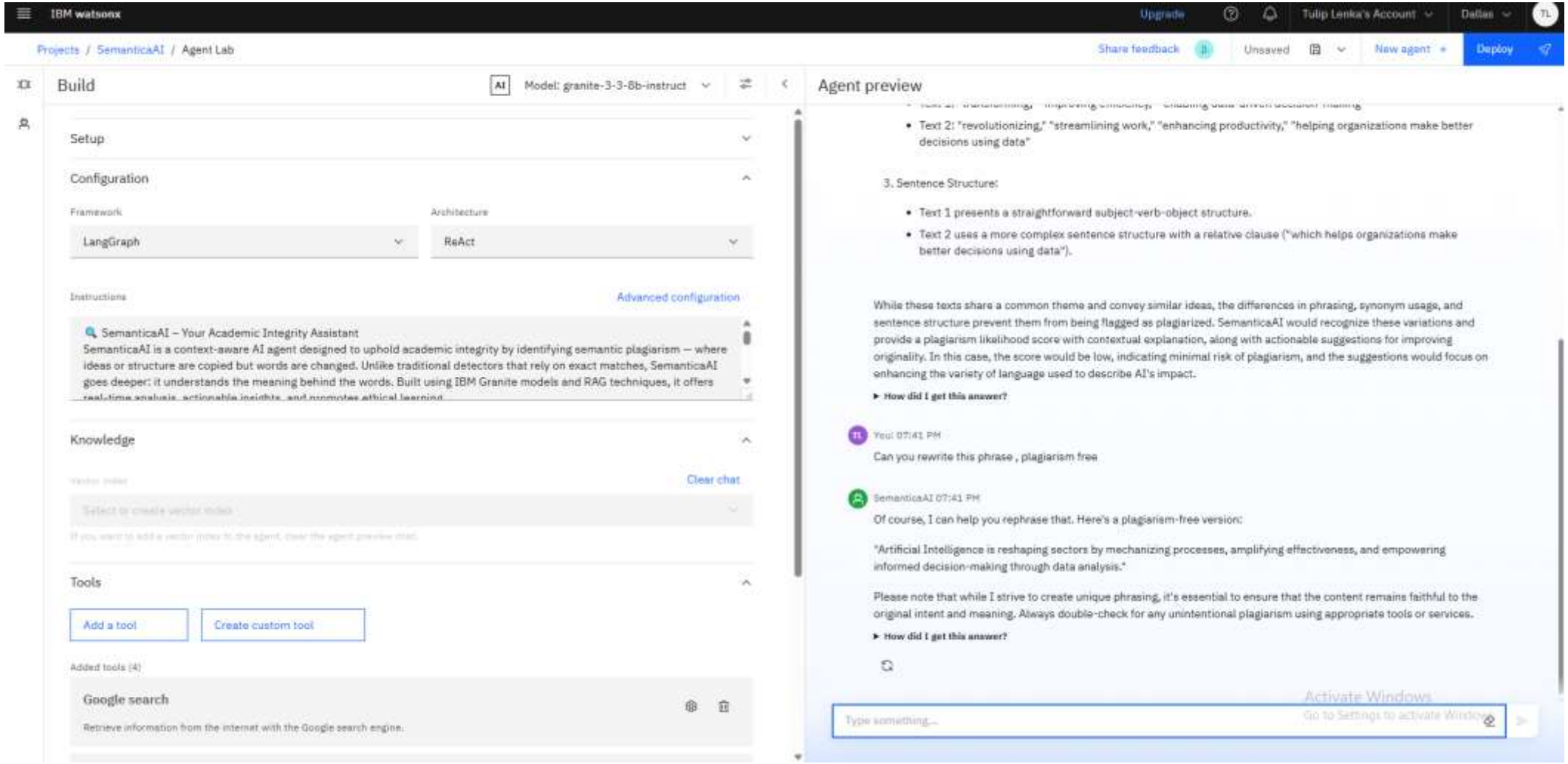
RESULTS



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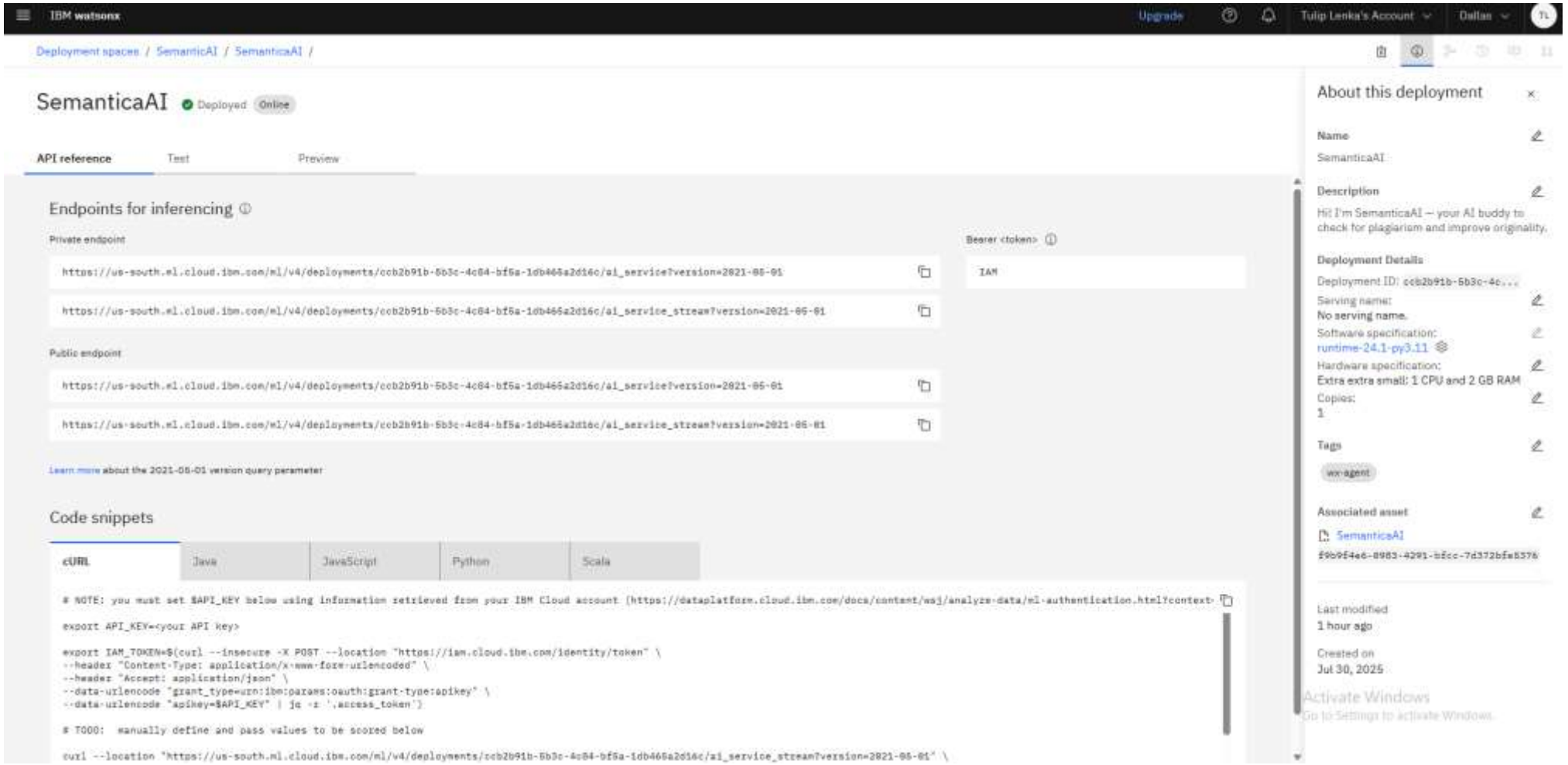
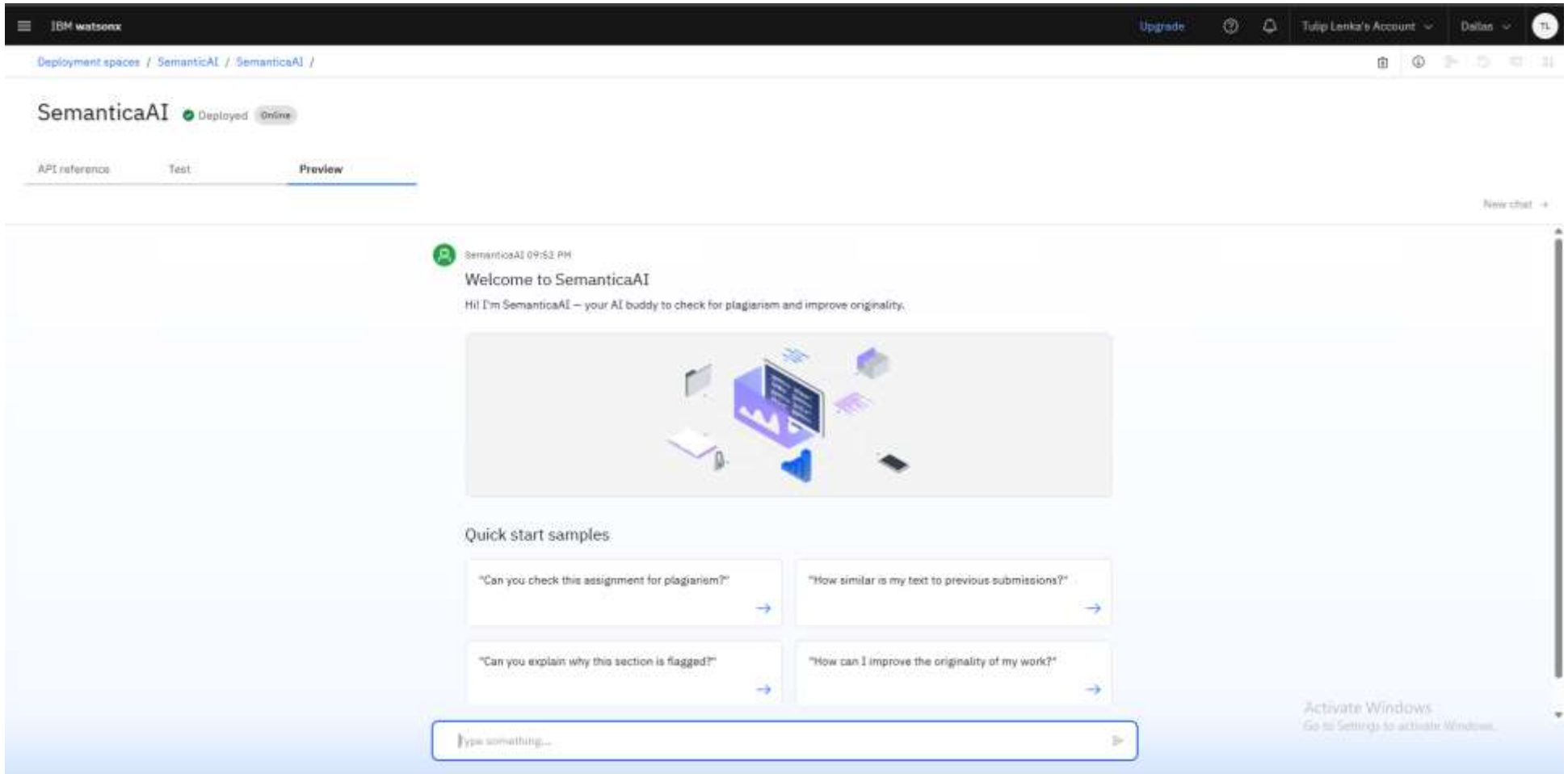
RESULTS



RESULTS

Deployed AI Agent :



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CONCLUSION

- **SemanticaAI** is more than just a plagiarism checker — it's an AI-powered academic companion that understands the *meaning* behind words. By detecting hidden and paraphrased plagiarism, it empowers users to write with integrity and confidence.
- Built entirely using IBM's cutting-edge Granite foundation models and deployed on the watsonx platform, SemanticaAI demonstrates how AI can transform education by promoting ethical learning, originality, and smart writing habits.
- With its potential for real-time use in classrooms and integration with learning platforms, SemanticaAI sets the stage for a new era of AI-guided academic support.

FUTURE SCOPE

- Add AI-generated text detection (like ChatGPT-style content)
- Language translation + multilingual plagiarism detection
- Support document uploads (PDF, DOCX)
- Integration with learning platforms (e.g., Moodle)
- Real-time classroom deployment

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

Getting Started with Artificial Intelligence

IBM

Tulip Lenka

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence

Issued on: Jul 16, 2025
Issued by: IBM SkillsBuild

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IBM

IBM **SkillsBuild** Completion Certificate

This certificate is presented to

Tulip Lenka

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins

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GITHUB LINK

- https://github.com/tuliip1807/SemanticaAI-Plagiarism-Checker

THANK YOU

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