
CAPSTONE PROJECT

MUSKAN'S COLLEGE ADMISSION AGENT

Presented By:

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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

A **College Admission Agent**, powered by **RAG (Retrieval-Augmented Generation)**, streamlines the student admission process. It retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official sources. Prospective students can ask natural language questions and receive accurate, up-to-date responses instantly. The agent helps with course selection, application guidance, fee structure, and important deadlines. Using trusted, real-time data, it reduces manual inquiries and enhances applicant experience. This AI-driven assistant boosts transparency, accessibility, and efficiency in college admissions.

PROPOSED SOLUTION

- The proposed system aims to address the challenge of guiding students through the complex college admission process by providing accurate, real-time responses to their queries. This involves leveraging Retrieval-Augmented Generation (RAG), natural language processing, and structured knowledge sources. The solution will consist of the following components:
- **Data Collection:**
 - Gather structured and unstructured data from college websites, brochures, government education portals (e.g., AICTE, NIRF, UGC), and academic forums.
 - Utilize real-time data sources such as entrance exam results, admission notifications, deadlines, and form availability.
- **Data Preprocessing:**
 - Clean and preprocess the collected data to handle missing values, duplicates, and inconsistencies.
 - Apply feature engineering and semantic tagging (e.g., course type, eligibility, fee range) to improve information retrieval.
- **Model Training:**
 - Implement a RAG-based system combining:
 - **Retriever** (e.g., FAISS, Elasticsearch)
 - **Generator** (e.g., LLaMA-3-70B-Instruct)
 - Train the system to interpret student queries and generate accurate responses using relevant data using NLP.
- **Evaluation:**
 - Accuracy
 - Response relevance
 - User satisfaction
 - Continuously fine-tune based on user feedback and system monitoring

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the College Admission Agent. Here's a suggested structure for this section:

- **System requirements**
 - **IBM Cloud**
 - **IBM watsonx.Ai Studio** (For training and deploying the RAG-based model.)
 - **IBM Cloud Object Storage** (To store structured/unstructured admission-related data.)
 - **LM (e.g., LLaMA-3-70B-Instruct)** (For generating accurate and personalized answers.)

ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**

- The proposed solution employs a **Retrieval-Augmented Generation (RAG)** approach, which combines a **retriever model** (for fetching relevant documents) with a **large language model (LLM)** such as **LLaMA-3-70B-Instruct** for generating natural language responses.

- **Data Input:**

- Inputs include user queries and structured/unstructured admission data such as course details, eligibility, fees, and deadlines.

- **Training Process:**

- The retriever and generator are fine-tuned using admission-related QA pairs and embeddings for accurate document matching.

- **Prediction Process:**

- On receiving a query, relevant documents are retrieved and used by the LLM to generate real-time, personalized responses.

RESULT

The screenshot displays the IBM watsonx AI Agent interface. The top navigation bar includes the IBM watsonx logo, an Upgrade button, a help icon, a notification bell, and user account information for Muskan Chauhan. The main interface is divided into two panels: 'Build' on the left and 'Agent preview' on the right.

Build Panel:

- Model:** llama-3-3-70b-instruct
- Setup:** Framework (LangGraph), Architecture (ReAct)
- Instructions:** You are a helpful assistant that uses tools to answer questions in summarize way. When greeted, say "Hi, I am College Admission Agent. How can I help you?" You retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official sources.
- Knowledge:** (Empty section)
- Tools:** Includes an 'Add a tool' button and a 'Create custom tool' button. Below, it shows 'Added tools (5)' with 'Google search' listed.

Agent preview Panel:

- User Message (MC):** You: 07:48 PM. Recently I have completed my 12th in arts . help me selecting the degraa course
- Agent Response (watsonx Agent):** 07:48 PM. Based on the search results, here are some of the best degree courses for arts students after 12th:
 - 1. Bachelor of Fashion Design
 - 2. Bachelor of Arts (BA)
 - 3. Bachelor of Fine Arts (BFA)
 - 4. Bachelor of Business Administration (BBA)
 - 5. Bachelor of Education (BEd)
 - 6. LLB (Bachelor of Laws)
 - 7. BA/MA in Psychology
 - 8. MSc in Counseling Psychology
 - 9. Diploma in Clinical Psychology
 - 10. Bachelor in Business Management Studies (BMS)

These courses offer a range of career options and have a high salary potential. It's important to note that the best course for an individual will depend on their interests, skills, and career goals. It's recommended to research each course thoroughly and consider factors such as job prospects, salary range, and personal fulfillment before making a decision.
- Input Field:** Type something...

RESULT

The screenshot displays the IBM watsonx AI Agent interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user account information for 'Muskan Chauhan's Account' in 'Dallas'. The breadcrumb trail shows 'Projects / AI_Agent / watsonx Agent'. The main interface is divided into two panels. The left panel, titled 'Build', contains sections for 'Setup', 'Configuration', 'Instructions', 'Knowledge', and 'Tools'. Under 'Configuration', 'LangGraph' is selected for the Framework and 'ReAct' for the Architecture. The 'Instructions' section contains a text box with the following content: 'You are a helpful assistant that uses tools to answer questions in summarize way. When greeted, say "Hi, I am College Admission Agent. How can I help you?" You retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official sources.' The 'Tools' section has an 'Add a tool' button and a 'Create custom tool' button. Below these, a list of 'Added tools (5)' includes 'Google search'. The right panel, titled 'Agent preview', shows a chat conversation. The user's message is: 'I would like to know more about the Bachelor of Fashion Design program. Can you tell me best colleges in India'. The agent's response is: 'Based on the search results, the best colleges for Bachelor of Fashion Design in India are: 1. NIFT Delhi, 2. NIFT Mumbai, 3. NIFT Bangalore, 4. NIFT Hyderabad, 5. NIFT Chennai, 6. Whistling Woods International, 7. Indian Institute of Fashion Design (IIFD), 8. Parsons School of Design, 9. Amity School of Fashion Designing, 10. Guru Kashi University. These colleges offer a range of fashion design courses, including diploma, undergraduate, and postgraduate programs. They have a strong reputation in the industry and provide students with the skills and knowledge needed to succeed in the fashion world. It's worth noting that the ranking of the colleges can vary depending on the source and criteria used, so it's always a good idea to do your own research and visit the colleges' websites to get a better understanding of their programs and offerings.' A text input field at the bottom of the chat window contains the placeholder text 'Type something...'.

IBM watsonx

Upgrade ? Bell Muskan Chauhan's Account Dallas MC

Projects / AI_Agent / watsonx Agent

Share feedback Autosaved 8:19 PM New agent + Deploy

Build AI Model: llama-3-3-70b-instruct

Setup

Configuration

Framework Architecture

LangGraph ReAct

Instructions [Advanced configuration](#)

You are a helpful assistant that uses tools to answer questions in summarize way.
When greeted, say "Hi, I am College Admission Agent. How can I help you?"
You retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official sources.

Knowledge

Tools

[Add a tool](#) [Create custom tool](#)

Added tools (5)

Google search

Agent preview

MC You: 08:18 PM

I would like to know more about the Bachelor of Fashion Design program. Can you tell me best colleges in India

watsonx Agent 08:18 PM

Based on the search results, the best colleges for Bachelor of Fashion Design in India are:

1. NIFT Delhi
2. NIFT Mumbai
3. NIFT Bangalore
4. NIFT Hyderabad
5. NIFT Chennai
6. Whistling Woods International
7. Indian Institute of Fashion Design (IIFD)
8. Parsons School of Design
9. Amity School of Fashion Designing
10. Guru Kashi University

These colleges offer a range of fashion design courses, including diploma, undergraduate, and postgraduate programs. They have a strong reputation in the industry and provide students with the skills and knowledge needed to succeed in the fashion world. It's worth noting that the ranking of the colleges can vary depending on the source and criteria used, so it's always a good idea to do your own research and visit the colleges' websites to get a better understanding of their programs and offerings.

How did I get this answer?

Type something...

RESULT

The screenshot displays the IBM watsonx AI Agent Builder interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user account information for 'Muskan Chauhan's Account' in 'Dallas'. The main breadcrumb trail shows 'Projects / AI_Agent / watsonx Agent'. The interface is divided into two main sections: 'Build' on the left and 'Agent preview' on the right.

Build Section:

- Model:** llama-3-3-70b-instruct
- Tools:** LangGraph and ReAct are selected.
- Instructions:** A text box contains the prompt: "You are a helpful assistant that uses tools to answer questions in summarize way. When greeted, say 'Hi, I am College Admission Agent. How can I help you?' You retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official courses." A link for 'Advanced configuration' is present.
- Knowledge:** A 'Vector index' section shows a 'Website' index. A 'Clear chat' button is available.
- Tools:** Buttons for 'Add a tool' and 'Create custom tool' are at the bottom.

Agent preview Section:

The chat history shows the following interaction:

- User (MC):** "I'm interested in applying for the Bachelor of Fashion Design course at Amity. Could you please guide me about the admission policy, eligibility criteria, and the complete fee structure? Also, I'd like to know if any scholarships or installment options are available."
- watsonx Agent:** "To apply for the Bachelor of Fashion Design course at Amity, you can visit their official website and follow the admission process. The eligibility criteria for this course typically include a 10+2 qualification with a minimum of 50% marks. The fee structure for the course may vary depending on the location and other factors, but it is around 2.5 lakhs per year. Amity University offers various scholarships to deserving students, including merit-based and need-based scholarships. Additionally, they provide installment options for paying the fees, which can be discussed with the university's admission team. It's recommended to check the official website or contact the university directly for the most up-to-date information on admission policies, eligibility criteria, fee structures, scholarships, and installment options." A link 'How did I get this answer?' is provided.

A text input field at the bottom of the preview chat contains the placeholder text 'Type something...'.

CONCLUSION

- The College Admission Agent, driven by Retrieval-Augmented Generation (RAG), addresses the complexities and inefficiencies of traditional admission processes. By providing instant, accurate, and personalized responses using real-time institutional data, it significantly improves the accessibility and transparency of admission-related information. This intelligent assistant not only reduces the burden on admission staff but also empowers students to make informed decisions. Ultimately, it transforms the admission experience into a streamlined, efficient, and student-centric process through the integration of AI technology.

FUTURE SCOPE

- **Geographical Expansion:**
Adapt the system to support multiple cities, states, or countries by handling regional admission criteria and languages
- **Integrate Edge Computing:**
Deploy the system on edge devices for efficient operation in low-bandwidth or remote areas.
- **Enhance Personalization:**
Tailor course and college suggestions based on user preferences and behavior.
- **Optimize System Performance:**
Enhance retrieval and response algorithms for faster, more relevant outputs.

REFERENCES

- <https://cloud.ibm.com/docs/watsonx-ai>
- <https://www.aicte-india.org>
- <https://www.nirfindia.org>
- <https://openai.com/research/gpt-4>

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THANK YOU