

MoodleMate UIR Connect

An AI Learning Companion for
Students

Created By:

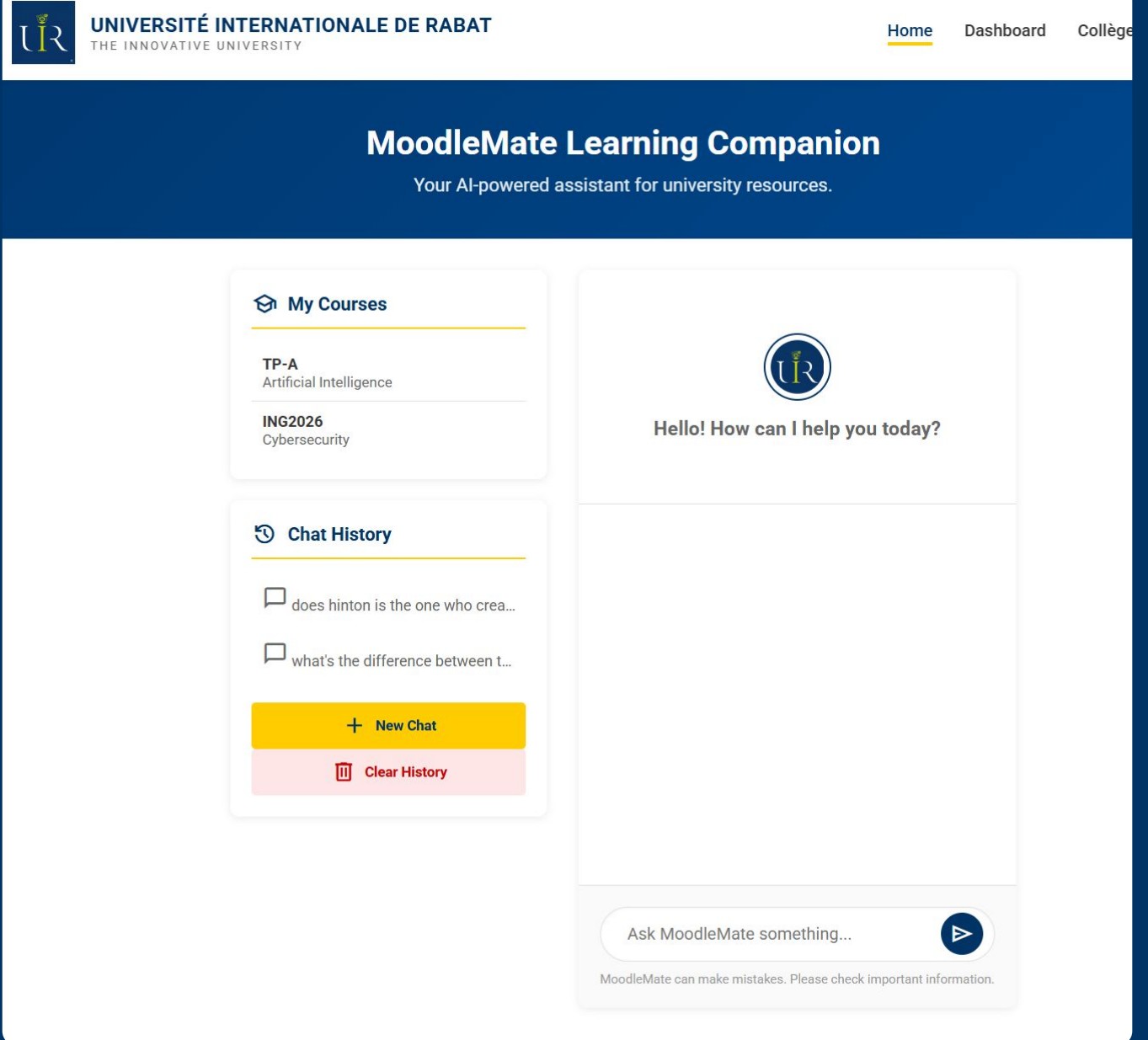
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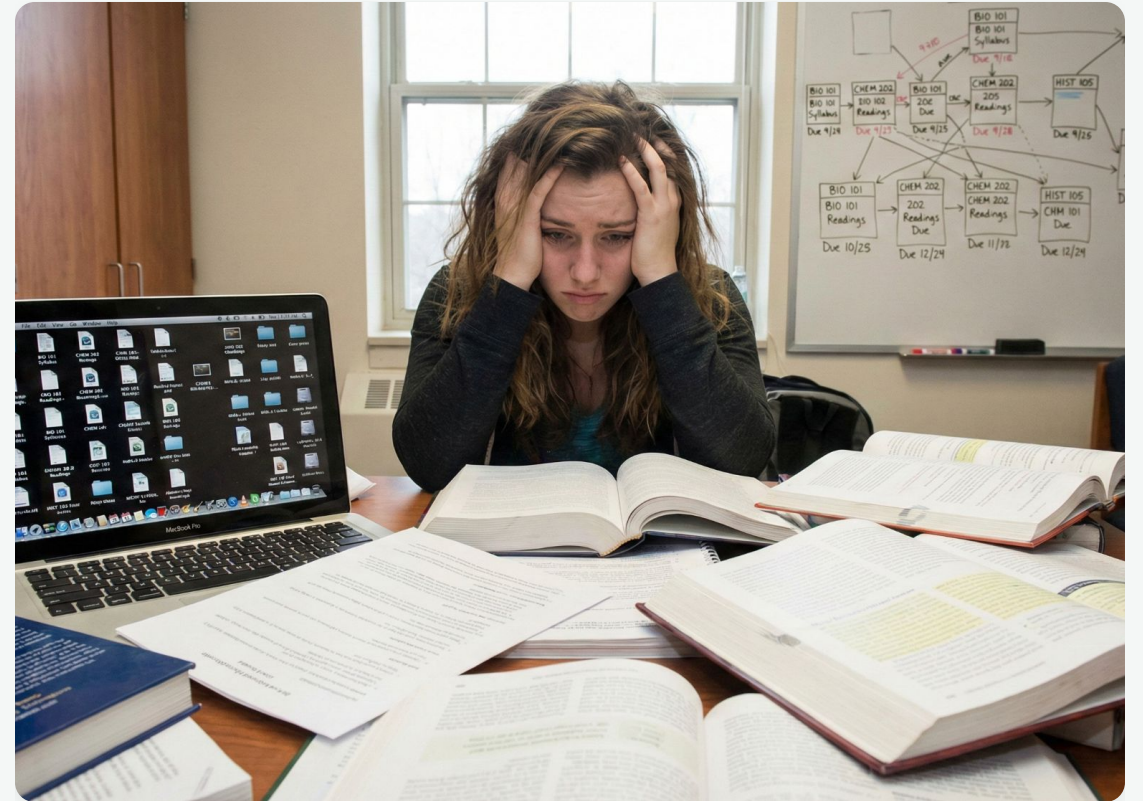


The Problem: Information Overload

Drowning in Documents

Students face a massive challenge: managing dozens of PDFs across multiple courses.

- Course syllabi, lab manuals, lecture notes.
- Specific answers are buried in hundreds of pages.
- Time wasted searching instead of learning.



The Solution: Chat with Your Data

A secure, instant, and accurate way to navigate university knowledge.



PDF Documents

Upload lecture notes and lab manuals securely.



AI Brain

MoodleMate processes and understands content.



Instant Answer

Get accurate responses cited from source.

Under the Hood: Architecture Overview

Ingestion

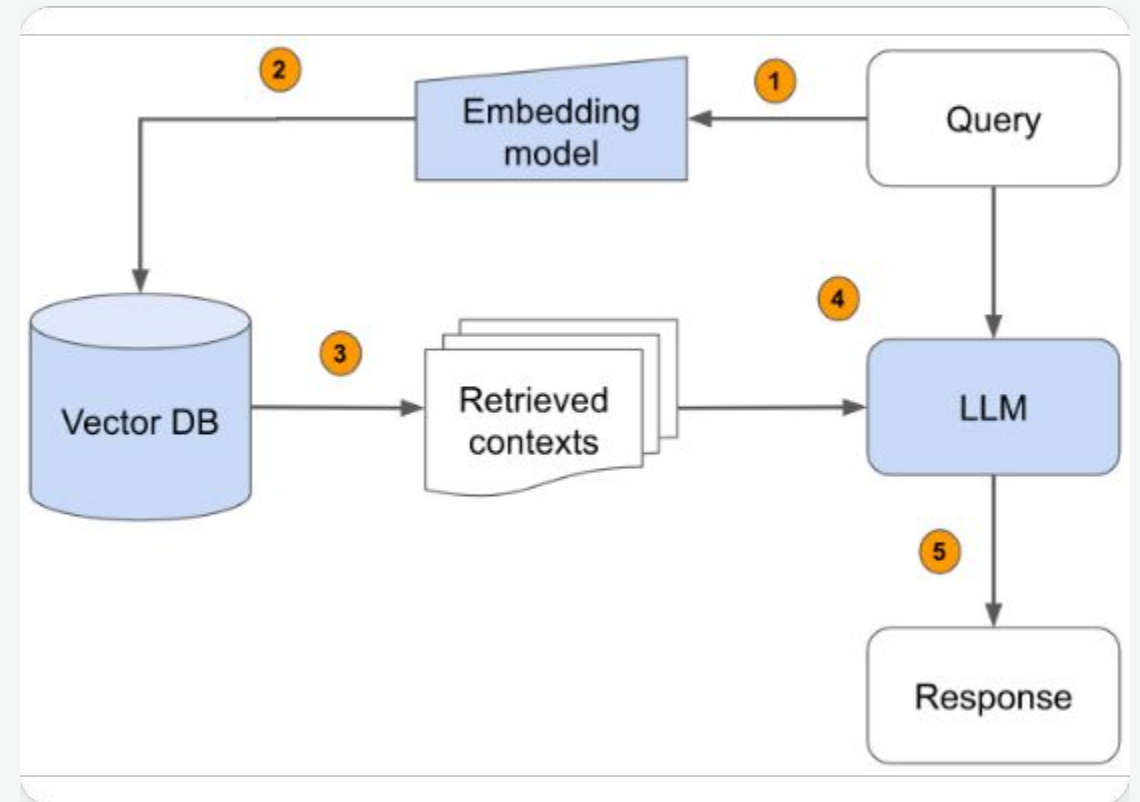
Python scripts automatically scan, chunk, and index PDF files for optimal processing.

Vector DB

ChromaDB stores knowledge locally, ensuring data privacy and fast retrieval.

LLM Power

Powered by **Llama 3 8B** (via Groq) to generate human-like, context-aware responses.



1. Large Language Model (LLM)

The Reasoning Engine

- **Tool:** Llama 3.1 8B (via Groq).
- **Concept:** A deep learning algorithm trained on massive datasets to recognize, summarize, and generate text.
- **Role in MVP:** It does NOT memorize your PDFs. Instead, it reads specific snippets we provide and formulates a coherent, human-like answer based **ONLY** on that content.



2. Vector Embeddings

Turning Text into Numbers

- **Tool:** HuggingFace (all-MiniLM-L6-v2).
- **Concept:** Converts text into long lists of numbers (vectors).
Similar ideas get similar numbers, enabling the computer to understand "semantic meaning" rather than just keywords.
- **Role in MVP:** Converts every PDF paragraph and every user question into vectors, allowing us to mathematically compare them to find the most relevant matches.

3. Vector Database

Long-Term Memory

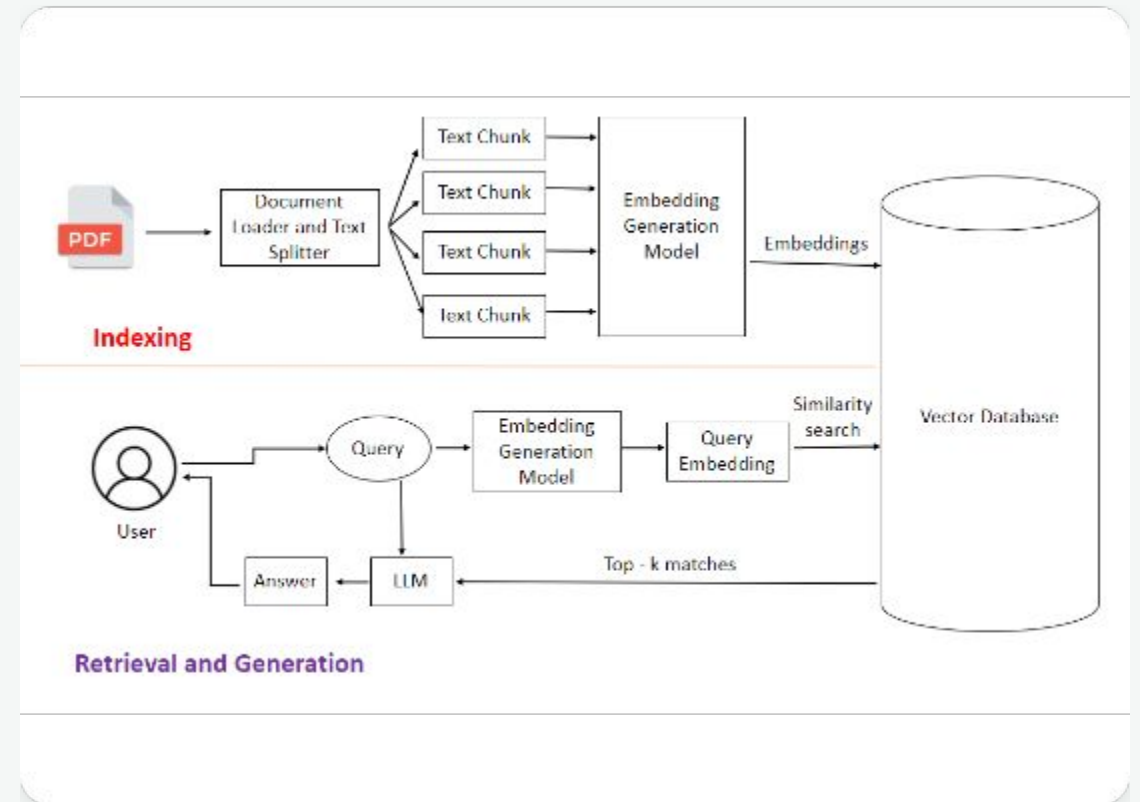
- **Tool:** ChromaDB.
- **Concept:** A specialized database optimized for storing and querying high-dimensional vectors. Unlike SQL, it excels at finding "similar" data.
- **Role in MVP:** Acts as the application's long-term memory. It stores the embedded representations of your PDF files locally, allowing for near-instant search and retrieval.



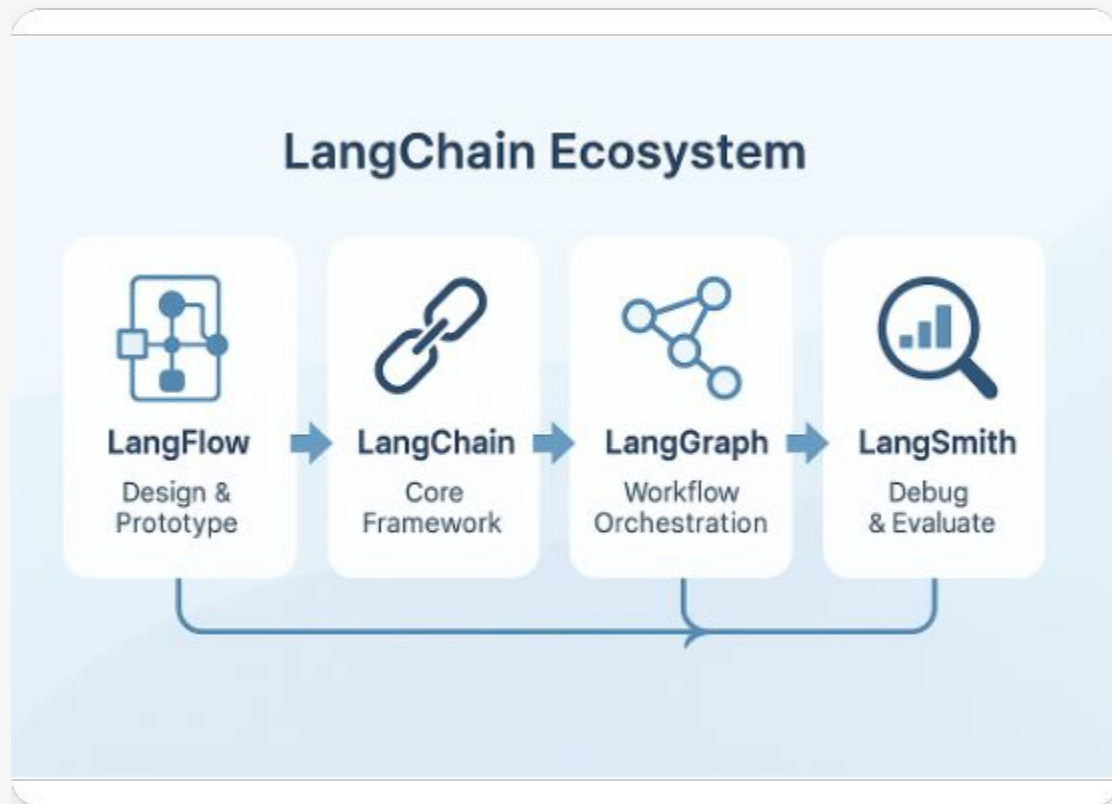
4. RAG Architecture

Retrieval-Augmented Generation Flow

- 1 User asks a question to the interface.
- 2 System searches **ChromaDB** for the Top 3 relevant PDF chunks.
- 3 System creates a prompt: *"Using these 3 chunks, answer the user's question."*
- 4 **Llama 3** generates the answer—accurate, sourced, and hallucination-free.



5. Orchestration



The "Glue" Code

- > **Tool:** LangChain.
- > **Concept:** A robust framework for developing applications powered by language models.
- > **Role in MVP:** It handles the entire chain of logic, connecting all the pieces together:
 - Loading PDFs
 - Splitting Text
 - Embedding & Storing
 - Retrieving & Prompting

Key Features



Zero Hallucinations

Every answer includes a direct citation to the source material (e.g., "See Data.pdf Page 5").



Persistent Memory

A local SQLite database keeps your chat history safe and accessible across sessions.



University Focused

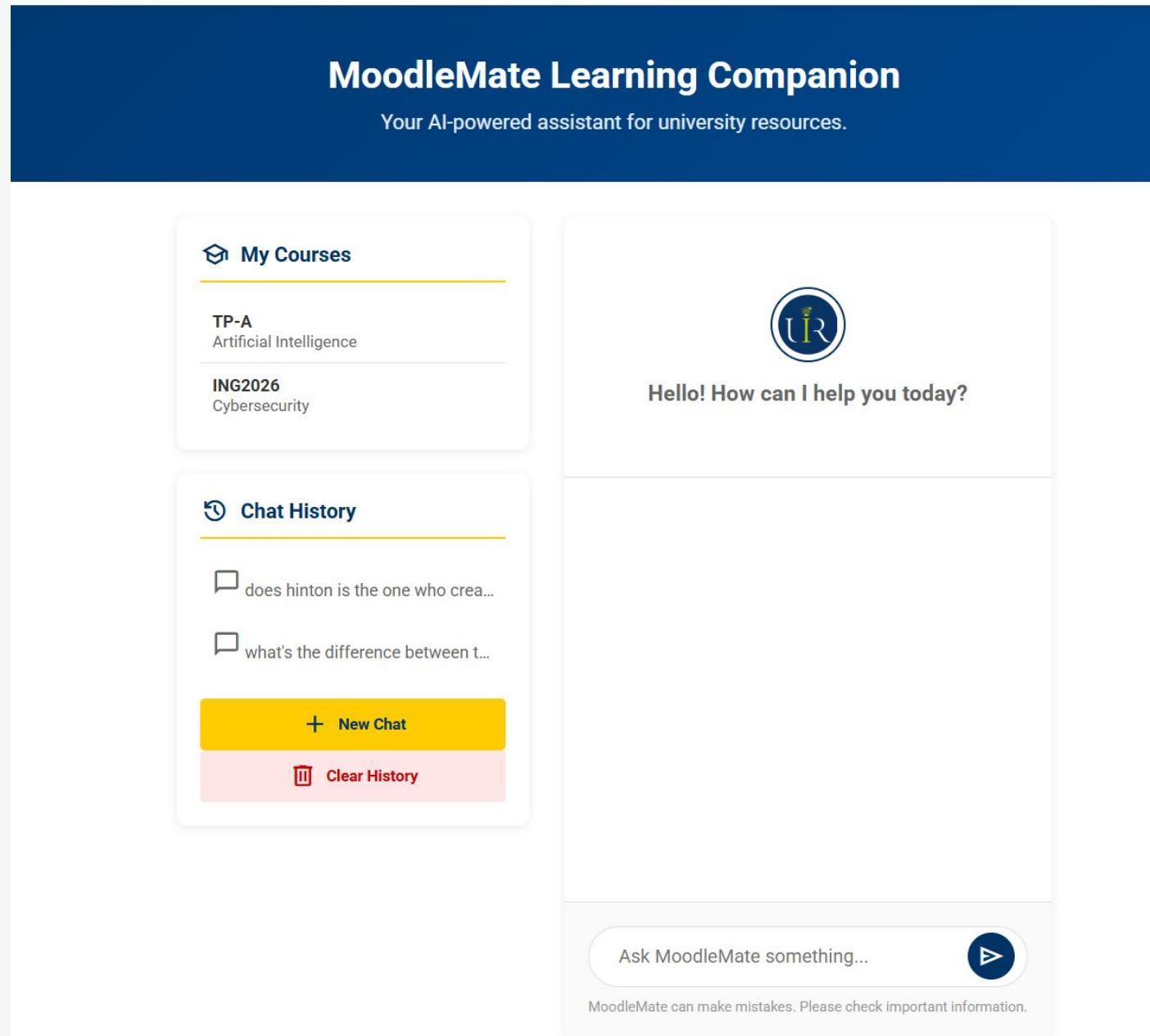
Pre-loaded with verified UIR course materials (Cybersecurity, AI, etc.) for instant value.

The User Interface

Intuitive & Clean

The interface is designed for focus and clarity.

- **Chat History:** Easy access to chat history and course selection.
- **Chat Area:** Modern bubble design for clear conversation flow.
- **Header:** Clean, blue-gradient branding.



Why MoodleMate?

Feature	Standard ChatGPT	MoodleMate (UIR)
Knowledge Source	Generic Internet Data	Your Professor's Notes
Relevance	Often Vague	100% Course Aligned
Citations	Rarely Specific	Exact Page Numbers
Data Privacy	Cloud / Public	Secure & Local

Demo Scenario

Real-Time Assistance

Student asks:

"Explain the Transformer architecture."

Result:

The bot replies instantly with the exact definition from the professor's slides, including a direct link to the specific page for further reading.

MoodleMate Learning Companion

Your AI-powered assistant for university resources.

Explain the transformer architecture

The transformer architecture is a type of neural network architecture that revolutionized natural language processing (NLP) by introducing an attention mechanism. It consists of several key components:

- 1. Self-attention layers:** These layers allow the model to weigh the importance of different input elements relative to each other, enabling it to capture long-range dependencies and parallelize processing.
- 2. Positional encodings:** These are added to the input embeddings to preserve the order of the input elements, which is essential for NLP tasks.
- 3. Feed-forward networks:** These are used as the building blocks of the transformer, consisting of two linear layers with a ReLU activation function in between.
- 4. Layer normalization:** This is used to normalize the output of each layer, which helps to stabilize the training process.

The transformer architecture is scalable, allowing it to process long sequences of input elements efficiently. It has several benefits, including:

- **Parallel processing:** The transformer can process input elements in parallel, making it much faster than traditional recurrent neural networks (RNNs).
- **Long-range dependencies:** The attention mechanism allows the model to capture

Ask MoodleMate something...

MoodleMate can make mistakes. Please check important information.



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The Future of Learning is Here.

Experience the power of AI-driven education with UIR Connect.

Thank you for your attention