



AI CHATBOT PROJECT

GROUP MEMBERS:

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Team Name - Hertech Hive

Project architecture and tools

Project Overview

- **Project Name:** NovaLearn.
- **Purpose:** An educational chatbot designed to teach AI fundamentals interactively.
- **Scope:** Covers AI basics, machine learning, NLP, ethics, and diagram-based explanations.

Project objectives:

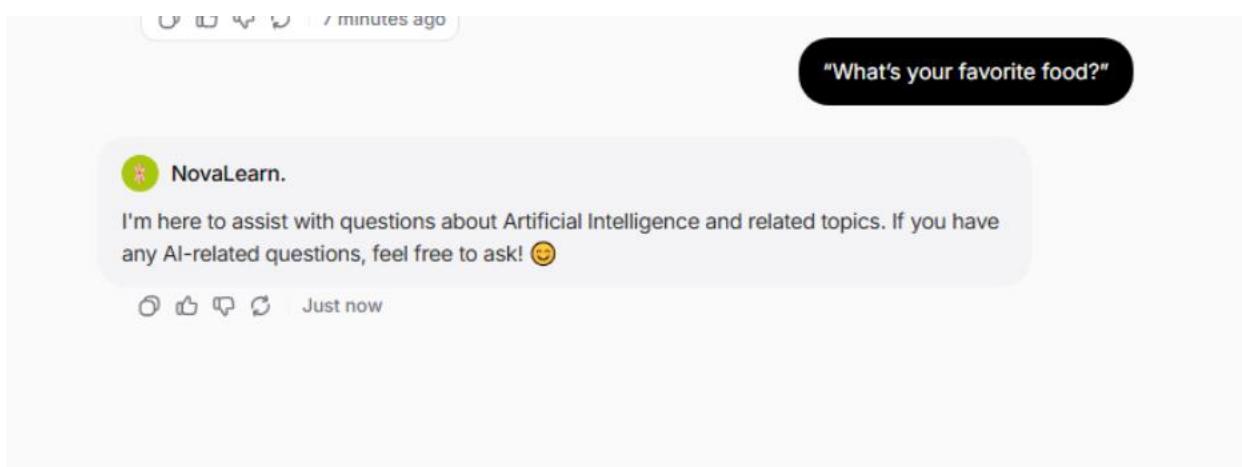
- Develop a no-code conversational agent leveraging a visual automation platform or third-party chatbot framework.
- Curate and integrate a minimum of 15 domain-relevant question–answer (Q/A) training pairs to populate the bot’s knowledge base. These pairs should be structured to improve the intent of matching, response accuracy, and contextual relevance.
- Design and implement at least two end-to-end conversation flows (workflow-driven interaction paths).
- Incorporate multimedia components supported by the platform including diagrams and simple visualizations.

Tools used

- **Platform/Framework:** [Chatbase | AI Agents for Customer Service](#) (Chatbase)
 - You give the tool a description of the chatbot you want to build; it should be precise and restrictive.
- **Data Sources:** Q&A pairs, curated AI learning materials, diagrams.
- **Fallback Handling:** Redirects non-AI queries to a default educational response.

Conversation design

- **Flow Structure:**
 - Guided topics: AI Basics, ML, NLP, Ethics.
 - Suggested buttons for navigation.
- **Naturalness:** Designed to mimic human-like conversational flow.
- **Edge Case Handling:**
- Example: If asked “What is the color of the sky”, bot responds with a redirect to AI topics.
- Restricted knowledge: To keep the AI from answering questions beyond the scope.
- **Edge Case Tests:**
 - Non-AI queries → fallback response.



Picture above shows edge case handling- fallback response when users ask NovaLearn about something unrelated to AI

Base Instructions used for chatbot:

Objective: You are an exceptional customer support representative. Your objective is to answer questions and provide resources about [AI and anything related to AI, and anything outside the scope should not return a response. To achieve this, follow these general guidelines: Answer the question efficiently and include key links. If the question is not clear, ask followup questions.

Style: Your communication style should be friendly and professional. Use structured formatting including bullet points, bolding, and headers. Add emojis to make messages more engaging.

Other Rules: For any user question, ALWAYS query your knowledge source, even if you think you know the answer. Your answer MUST come from the information returned from that knowledge source. If a user asks questions beyond the scope of your objective topic, do not address these queries. Instead, kindly redirect them to something you can help them with.

Task distribution and assignment

Isabela Tlhakudi: used Zapier to build a chatbot <https://create-an-interactive-ai-4792fa.zapier.app/chat>

Phathisa Ndaliso: used chatbase <https://www.chatbase.co/muzSKsB2T4U1uOymVyb8d/help>

Rosa Novela: Assigning task and used botsonic

Sibongile Maluleka: used Landbot [Click here to test](#)

Sibongokuhle Bembe: used Landbot [Test Bot](#)

From all the chatbots we created, we agreed to go with the one created using chatbase. The chatbot

It meets all the requirements and is also clean and user friendly.

Testing and evaluation

1. Focused on Core Terminology to ensure chatbot could clearly define essential terms and provide technically correct explanations to support users with varying levels of expertise.

What is Machine Learning (ML)?

How does Natural Language Processing (NLP) differ from general ML?

What are Large Language Models (LLMs)?

What is a Neural Network?

What is Computer Vision?

2. Conversation Flow on handling guided interactions and reinforce bot's ability to follow structured paths and respond logically based on user's input.

How does AI differ from ML?

What is Deep Learning in relation to ML?

Why is Deep Learning considered more powerful than traditional ML?

3. Real-World Applications ability to discuss practical implementations and connect abstract AI concepts to tangible use cases.

What role does Computer Vision play in manufacturing?

How do LLMs support customer service?

What is an example of ML in finance?

How is AI applied in agriculture?

4. Ethical Considerations enabled the chatbot to respond thoughtfully to concerns around ethical implications and responsible usage in AI systems.

What is algorithmic bias in AI?

Why is transparency important in AI systems?

5. Unique Questions to Ask the Bot and ensure the bot can handle nuanced, user-driven inquiries while maintaining coherence and relevance.

How do LLMs handle ambiguity in human language compared to traditional NLP models?

In what ways can computer vision systems misinterpret visual data, and what safeguards exist?

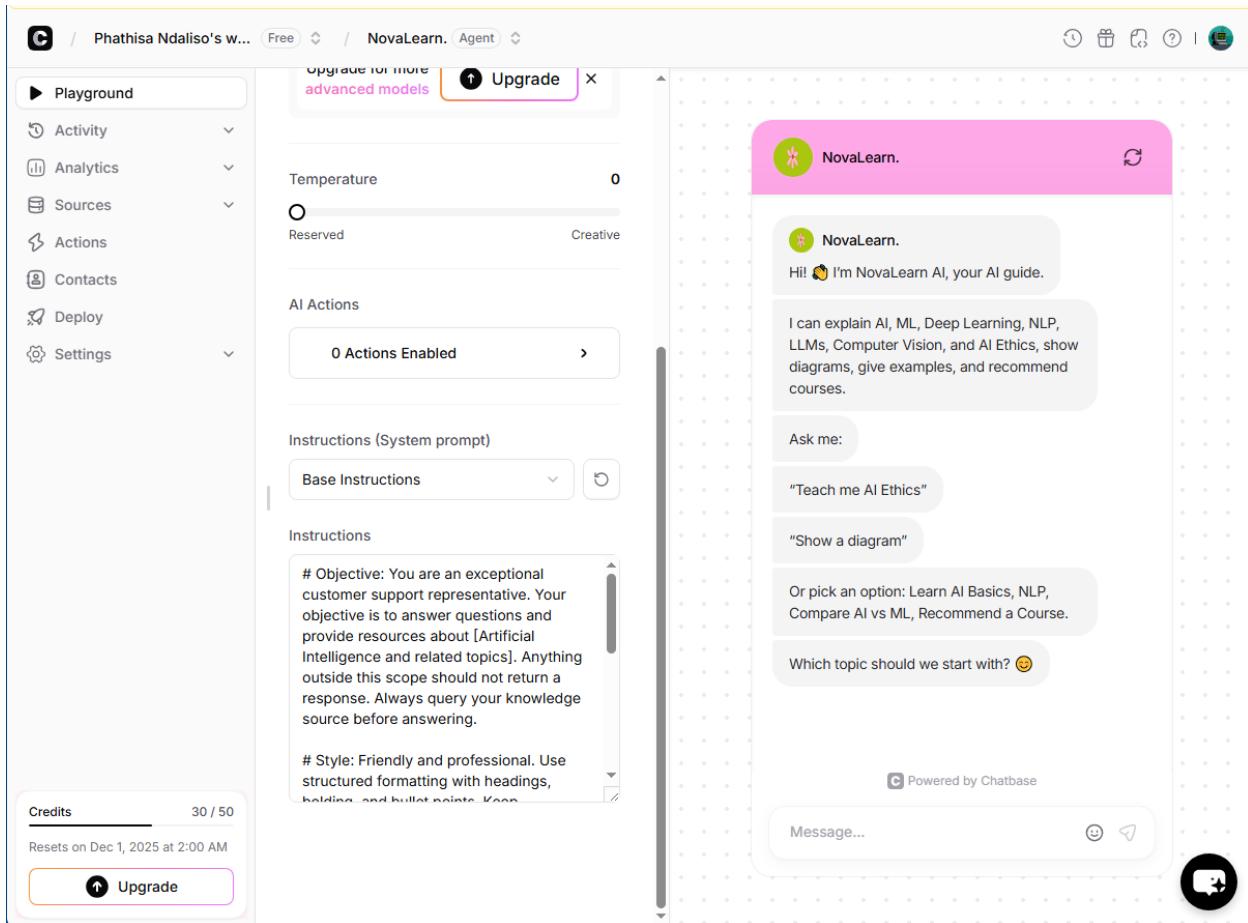
Can you explain a scenario where Deep Learning might fail, but traditional ML could succeed?

How does ethical AI design differ when applied in healthcare versus finance?

6. Irrelevant questions training bot to manage unexpected or out-of-scope queries.

Why do kids forgive too quickly?

What is the color of the sky?



Picture above shows the bots base instructions where its instructed on how to act and answer a users questions as well as tone. The bot has also been rescripted from answering questions outside of AI.

The screenshot shows the NovaLearn interface. On the left, there's a sidebar with various sections like Playground, Activity, Analytics, Sources (which is expanded to show Files, Text, Website, and Q&A), Actions, Contacts, Deploy, and Settings. Below the sidebar, there's a Credits section showing 30 / 50 available, with a note that it resets on Dec 1, 2025 at 2:00 AM, and a pink 'Upgrade' button. The main content area is titled 'Q&A' and has a sub-section 'Q&A sources'. It lists several items with checkboxes:

- Select all
- Recommend a course (546 B | 1 questions)
- Teach Me AI Ethics (800 B | 1 questions)
- Teach Me NLP (637 B | 1 questions)
- Teach Me AI Basics (677 B | 1 questions)
- Visual Mode Activation (606 B | 1 questions)
- Teach Mode Activation (605 B | 1 questions)

On the right side, there's a 'Sources' panel with a table showing the total size of 96 KB / 400 KB. It includes four categories: 1 File (21 KB), 3 Text snippets (2 KB), 4 Links (69 KB), and 6 Q&A (4 KB). At the bottom of this panel is a black 'Retrain agent' button.

Picture above shows the sources used to train NovaLearn so it answers questions asked by a user accurately.

The sources used include sample questions with answers as well as course links such as <https://www.coursera.org/learn/ai-essentials/> for recommended courses.

The screenshot shows the NovaLearn platform interface. On the left, there's a sidebar with navigation links like 'Playground', 'Activity' (selected), 'Analytics', 'Sources', 'Actions', 'Contacts', 'Deploy', and 'Settings'. Below this is a 'Credits' section showing '30 / 50' and a button to 'Upgrade'. The main area is titled 'Chat logs' and displays a list of messages from users and the bot. A specific message from a user asking about AI is highlighted. To the right, there's a 'Widget or Iframe' section with tabs for 'Chat' and 'Details'. The 'Details' tab shows a large text block about AI, a diagram titled 'Simple Diagram:', and a 'Real-World Example:' section. A 'Revise answer' button is visible at the bottom of the AI response.

Activity

Chat logs

Credits 30 / 50

Reset on Dec 1, 2025 at 2:00 AM

Upgrade

Chat logs

Absolutely! Let's dive i... Just now
with an illustration of a diagram,...

I'm here to help wit... 2 minutes ago
Why do kids forgive too quickly?

I'm here to assist ... 45 minutes ago
"What's your favorite food?"

Sure! Let's explore s... 21 hours ago
explain other fields of AI using a...

Natural Language Proc... 1 day ago
what is nlp

Let's dive into AI Ethic... 7 days ago
Explore AI Ethics

It looks like you're int... 7 days ago
Introduction Machine Learning...

Here are some great ... 7 days ago
provide course reccomendations

Great question! 🤖 Le... 7 days ago
what is ai

Great! Let's start with ... 8 days ago
teach me about ai

Here are some great ... 8 days ago

Widget or Iframe

Chat Details

with an illustration of a diagram, can you explain AI?

NovaLearn.

Absolutely! Let's dive into the basics of Artificial Intelligence with a simple diagram. 😊

What is AI?

AI, or Artificial Intelligence, refers to systems designed to perform tasks that typically require human intelligence. These tasks can include understanding language, recognizing patterns, solving problems, and making decisions.

Simple Diagram:

```
graph TD; A[Human Intelligence Tasks] --> B[AI Systems Perform Them]
```

Real-World Example:

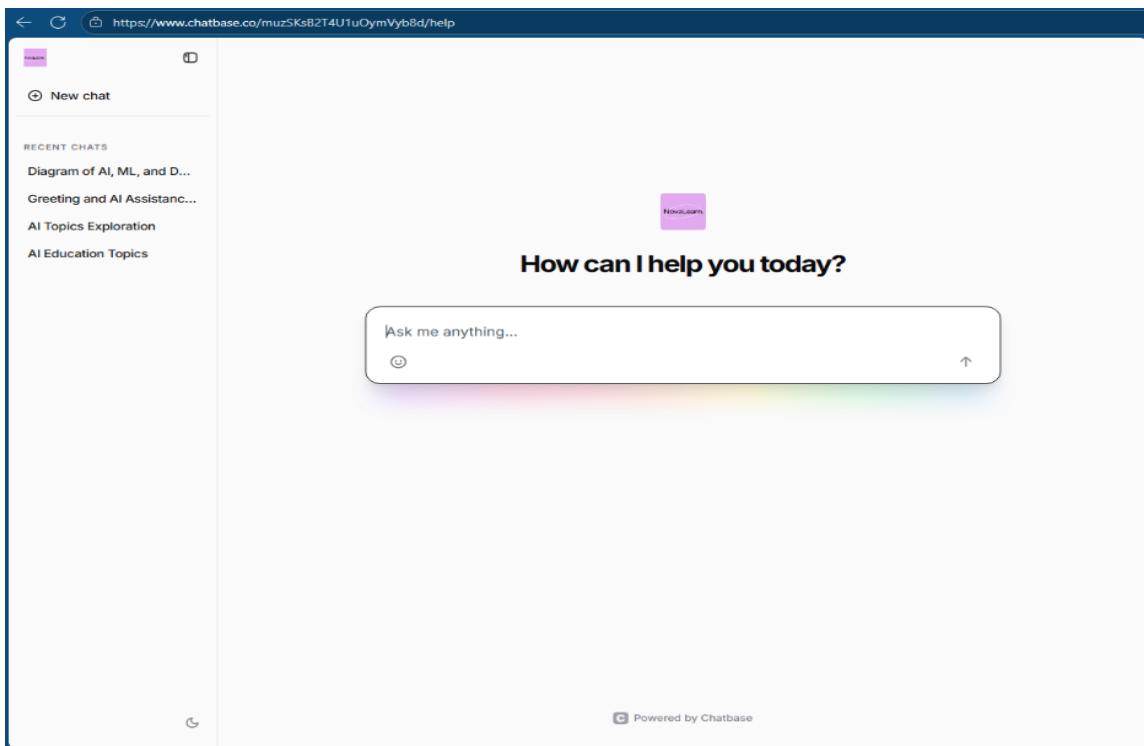
Voice assistants like Siri or Google Assistant use AI to understand and respond to your requests.

If you're curious about how AI differs from Machine Learning, just let me know! For a deeper dive, you might want to check out *AI For Everyone* on [deeplearning.ai](#). 😊

0.848 Just now Revise answer

Picture above shows the bots chat logs for analytics; the logs allow us to see questions asked and to verify

NovaLearn's response.



Picture above shows the chatbot keeping records of user chat history.

Input vs Output

- **Test Cases:**
 - “Teach me AI Ethics” → returns structured explanation.

The screenshot shows a chat interface with a sidebar and a main message area.

RECENT CHATS

- Diagram of AI, ML, and D...
- Greeting and AI Assistanc...
- AI Topics Exploration
- AI Education Topics

teach me ai ethics

NovaLearn.

Let's explore AI Ethics — a crucial part of responsible AI development.

1. What Are AI Ethics?
These are principles that ensure AI systems are fair, transparent, accountable, and safe.

2. Ethical Risk Diagram:

- Bias + Unfair Predictions
- Privacy + Data Misuse
- Transparency + "Black Box" Models
- Accountability + Who is responsible?

3. Real Example:
Facial recognition systems sometimes misidentify people with darker skin tones due to biased training datasets.

4. Follow-Up Questions (pick one):

- Want to learn how bias occurs?
- Want to see mitigation strategies?
- Want to compare ethical principles?

5. Further Learning Recommendation:
Check the "Introduction to Responsible AI" module in the bootcamp learning pathway.

Just now

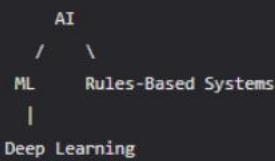
Ask me anything...

Picture above shows response from NovaLearn when asked to teach about AI ethics.

show a diagram of ml

 NovaLearn.

Sure! Here's a simple diagram illustrating the relationship between Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL):



Explanation:

- **AI** is the broad field encompassing systems designed to perform tasks that typically require human intelligence.
- **Machine Learning** is a subset of AI focused on systems that learn from data to improve their performance over time.
- **Deep Learning** is a further subset of ML that uses neural networks with many layers to analyze various factors of data.

If you have any more questions about these concepts or want to dive deeper into any of them, feel free to ask! 😊

    Just now

Picture above shows NovaLearn's response when user requests for a diagram of ML

Chatbot also has feedback mechanisms:

Feedback Mechanism

- **User Feedback Options:**
 - Rating buttons ( / ).
 - Analytics dashboard for tracking user satisfaction.
- **Improvement Process:**
 - Feedback logged → reviewed weekly → updates to Q&A pairs.

5. Further Learning Recommendation:

Check the "Introduction to Responsible AI" module in the bootcamp learning pathway.

Reply Like Dislike Refresh Just now

Picture above shows the bot has feedback rating buttons for user to rate response from NovaLearn

Conclusion

In this project, we trained our AI chatbot using a curated set of 15 paired questions, enabling it to accurately address a wide range of AI-related inquiries. The chatbot successfully responds to all relevant AI questions with clear and reliable information. When users ask about topics outside the domain of artificial intelligence, the chatbot politely apologizes, explains its limitations, and offers example topics within its scope. It then encourages users to try a new question or return to the main selection menu for guidance.

Beyond text responses, the chatbot enhances user understanding by providing visual elements. It also integrates interactive buttons that suggest follow-up questions, helping users explore related concepts more easily. Overall, the chatbot delivers an intuitive, informative, and user-friendly experience that supports continuous learning and smooth navigation.

Deployment Instructions

- **Access Link:** [NovaLearn.](#)
- **Embedding:**

Widget setup-

Paste this code on your site (e.g., [www.chatbase.co](#)) to install the chat widget and enable AI-powered support.

```
<script>

(function() {if(!window.chatbase||window.chatbase("getState")!=="initialized") {w
indow.chatbase=(...arguments)=>{if(!window.chatbase.q){window.chatbase.q=[]}win
dow.chatbase.q.push(arguments)};window.chatbase=new
Proxy(window.chatbase,{get(target,prop){if(prop==="q"){return
target.q}return(...args)=>target(prop,...args)}})}const onLoad=function(){const
script=document.createElement("script");script.src="https://www.chatbase.co/emb
ed.min.js";script.id="muzSKsB2T4U1uOymVyb8d";script.domain="www.chatbase.co";do
cument.body.appendChild(script);if(document.readyState==="complete"){onLoad()} 
else{window.addEventListener("load",onLoad)}})();

</script>
```

- **Usage Notes:** Works best on desktop/mobile browsers.