Omega-X

Changing the way we use AI to Learn!

By David Alex Joemon

3rd Semester Computer Science & Engineering

REVA University, Bangalore

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Abstract

Using Large Language Models (LLMs) has become a norm today, the advancement of Artificial Intelligence (AI) and Machine Learning (ML) has made these technologies widely accessible for various tasks. However, the prevalent use of Large Language Models (LLMs) like ChatGPT 4.0 and Copilot by students has raised concerns among educators about the decline in critical thinking and problem-solving skills. Our platform Omega-X addresses this issue by offering a personalized teaching assistant named Pax, which employs the Socratic method to guide students toward discovering answers independently. This approach fosters originality and critical thinking, promoting a more profound learning experience.

Introduction

In recent years, advancements in Artificial Intelligence (AI) and Machine Learning (ML) have been remarkable. Today, AI is easily accessible to everyone for a multitude of purposes, including summarizing lengthy texts, generating music, analysing data, and even creating images and videos. AI has undeniably revolutionized our lives; for instance, many students now use Large Language Models (LLMs) like ChatGPT 4.0 and Copilot to answer their queries.

However, this widespread usage has raised concerns. Are students truly engaging with these generated responses, or merely copying and pasting them? Educators across all levels have voiced their worries, with numerous articles reporting that students often bypass understanding

and simply use AI-generated answers to complete their assignments. Teachers can easily discern whether the answers are AI-generated based on the students' classroom performance. This trend has led to a decline in the learning curve, particularly among younger students, who are missing the opportunity to exercise their own problem-solving skills, leading to severe implications.

But should we ban students from using these powerful tools? Absolutely not. In an era where AI holds the potential to solve human problems, we cannot hinder the younger generation from leveraging these advancements. So, what is the solution? This is where Omega-X comes into play. Our platform offers students a personalized teaching assistant named Pax, who provides answers to their questions. Unlike current LLMs, Omega-X is fine-tuned to employ the Socratic method, prompting users with questions that guide them to discover answers on their own. This approach fosters creativity and critical thinking, which have long been missing.

Prototype Concept

Why use the Socratic Method?

"I cannot teach anybody anything. I can only make them think."

- Socrates

Developed by the Greek philosopher Socrates, the Socratic Method is a form of dialogue between teacher and students, driven by the teacher's continuous probing questions. This method aims to explore and challenge the underlying beliefs that shape students' views and opinions. In our prototype, we have incorporated the Socratic Method to ensure that there is an engaging communication between the student and the learning assistant Pax, which thereby leads to:

- **Promote Critical Thinking**: This method encourages learners to engage in profound and analytical thinking about the subject at hand.
- **Encourage Active Learning**: Students participate actively, making the learning experience more dynamic and engaging.
- **Foster Independent Thought**: Learners develop their own ideas and perspectives rather than passively absorbing information.
- **Enhance Communication Skills**: Through dialogue, students practice articulating their thoughts clearly and effectively.
- **Create a Collaborative Environment**: The interactive nature of this method fosters a spirit of collaboration and mutual respect among learners.

The Impacts of this method in our application include the following:

- **Deeper Understanding**: Students achieve a more comprehensive grasp of the material by exploring various viewpoints.
- **Improved Problem-Solving Skills**: This method trains learners to approach problems with an analytical mindset and consider multiple solutions.

- **Better Retention**: Active engagement and critical examination often lead to greater retention of information.
- **Development of Reasoning Skills**: Regular practice with this method sharpens reasoning and argumentation abilities.
- **Increased Self-Confidence**: As students grow more comfortable expressing their ideas and participating in intellectual discussions with the learning assistant Pax, their confidence builds.

Working of the Prototype

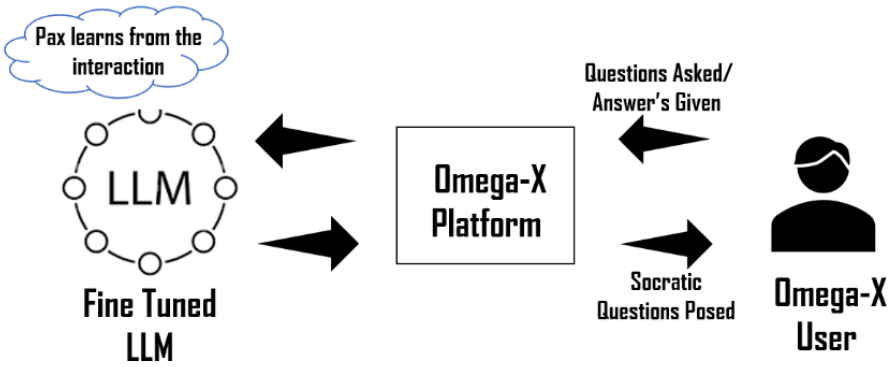
Omega-X is an innovative platform that enhances existing Large Language Models (LLMs) through fine-tuning to provide an optimal learning experience. By fine-tuning the LLMs, Omega-X tailors the responses to be more aligned with educational goals, ensuring that the information provided is accurate, relevant, and conducive to learning.

Unlike traditional LLMs, Pax employs the Socratic method, which involves asking thought-provoking questions to stimulate critical thinking and creativity. This approach encourages students to engage more deeply with the material, fostering a better understanding and retention of knowledge.

The process begins with the student posing a question or seeking clarification on a topic. Pax responds not by directly providing the answer but by prompting the student with carefully crafted questions. These questions are designed to lead the student towards the answer, encouraging them to think critically and independently. This interactive dialogue helps students develop problem-solving skills and a deeper comprehension of the subject matter.

Omega-X continuously learns and adapts based on user interactions, further refining its responses to better suit individual learning styles. It is also trained to remember the previous conversations to be able to follow through with the student.

Workflow Diagram



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