



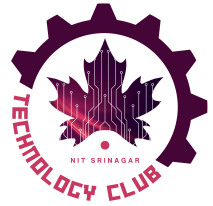
Robonox Student Chapter

Technology Club, Students' Gymkhana

National Institute of Technology Srinagar

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An Autonomous Institute of National Importance Under aegis of Ministry of Education, Govt of India



Report on Workshop: Fundamentals of AI — From Scratch to AI Agents

Robonox Student Chapter, Technology Club
Under Students' Gymkhana, NIT Srinagar

Organized by: Robonox Student Chapter, under the aegis of the Technology Club, NIT Srinagar

Location: NIT Srinagar

Date: 25 October 2026

Duration: 4:00 PM – 5:30 PM

Participants: 40 students

Introduction

Robonox Student Chapter, under the aegis of the Technology Club, NIT Srinagar, successfully organized a workshop titled “Fundamentals of AI: From Scratch to AI Agents” on 25 October 2026. The workshop aimed to introduce students to the fundamentals of Artificial Intelligence, with a particular focus on Large Language Models (LLMs), prompt engineering, Retrieval-Augmented Generation (RAG), tools, and AI agents.

The session combined theoretical explanations with hands-on demonstrations to help participants understand how modern AI systems work and how they can be used to build practical applications. Approximately 50 students participated in the workshop.

Objective

The primary objectives of the workshop were:

- To introduce students to Python programming through hands-on coding.
- To explain the working, training, and inference processes of Large Language Models.
- To familiarize participants with key concepts such as tokens, embeddings, and context length.
- To demonstrate LLM API integration and the importance of system and user prompts.

- To explain the limitations of LLMs and introduce RAG as a solution for working with external and private data.
- To introduce tools, tool calling, and AI agents through practical demonstrations.

Session Overview

The workshop was conducted through a structured combination of theoretical explanations, live demonstrations, and hands-on activities. The session progressed from basic programming concepts to the practical use of LLMs and the development of AI agent workflows.

The initial part of the workshop introduced participants to Python programming, followed by an explanation of how LLMs work and are trained. The session then moved toward practical API integration, prompt engineering, the limitations of LLMs, RAG, and the use of tools in AI agents.

Topics Covered

Introduction to Python Programming

The workshop began with a brief introduction to Python, covering its importance in AI development and its role in building modern AI applications. Participants were introduced to basic programming concepts through hands-on coding exercises.

Understanding Large Language Models (LLMs)

The theoretical section explained the fundamental working principles of LLMs, including how they are trained and how they generate responses during inference. Key concepts such as tokens, embeddings, and inference were explained to help participants understand the underlying processes of language models.

Practical LLM API Integration and Prompt Engineering

Participants were introduced to making API calls to LLMs using a free Grok API key. Through practical demonstrations, the workshop explained how applications communicate with language models and receive generated responses.

Special emphasis was placed on the importance of system prompts and user prompts, demonstrating how instructions and user inputs influence the behavior, relevance, and quality of LLM responses.

Limitations of LLMs and the Cutoff Problem

The session explored the limitations of LLMs, particularly the cutoff problem associated with their training knowledge. Participants learned why a model may not possess information about recent developments or specific data that was not available during training.

The discussion also introduced the challenges of providing private or organization-specific information to LLMs and highlighted the importance of suitable approaches for using external data.

Context Length and Retrieval-Augmented Generation (RAG)

The workshop explained context length limitations and how these affect the amount of information an LLM can process at a time.

To address these limitations, participants were introduced to Retrieval-Augmented Generation (RAG). The session explained how relevant information can be retrieved from external knowledge sources and supplied to an LLM to generate more informed responses. The concept was discussed in the context of working with private documents and domain-specific information.

Tools and Tool Calling in LLMs

The session introduced the concept of tools in LLM-based applications and explained how models can use external capabilities to perform tasks beyond generating text.

A practical demonstration illustrated the importance of tool integration in extending the functionality of AI systems and enabling them to interact with external services.

Introduction to AI Agents

The final part of the workshop focused on AI agents and how they differ from basic LLM-based applications. Participants learned how agents can use language models, tools, and instructions to perform tasks through a structured workflow.

A practical demonstration was conducted by creating a PowerPoint presentation using the Canva plugin in ChatGPT, illustrating how an AI system can use an integrated tool to accomplish a real-world task.

Learning Outcomes

By the end of the workshop, participants gained an understanding of:

- The fundamentals of Python programming and its relevance to AI.
- How LLMs are trained and how inference works.
- The concepts of tokens, embeddings, and context length.
- Practical LLM API integration using a Grok API key.
- The role of system prompts and user prompts in controlling model behavior.
- The cutoff problem and the limitations of LLM knowledge.
- How RAG can support applications that use external and private data.

- The role of tools and tool calling in extending LLM capabilities.
- The fundamental architecture and practical applications of AI agents.

Overall Outcomes

The workshop successfully introduced approximately 50 students to the practical foundations of modern AI systems. By combining conceptual explanations with live demonstrations, it helped bridge the gap between theoretical knowledge and real-world implementation.

The hands-on API integration and Canva demonstration provided participants with practical exposure to using LLMs and AI-powered tools. The session also encouraged students to explore further learning opportunities in prompt engineering, RAG-based applications, and AI agent development.

Conclusion

The workshop “Fundamentals of AI: From Scratch to AI Agents” was successfully conducted by Robonox Student Chapter under the aegis of the Technology Club, NIT Srinagar, on 25 October 2026.

The session provided a comprehensive introduction to the fundamentals of AI, the working principles and limitations of LLMs, prompt engineering, RAG, tool integration, and AI agents. The combination of theory and practical demonstrations made the workshop an engaging learning experience for the participants.

Some Glimpse of Workshop

