Contribution ID: **26** Type: **Lecture**

From Text to Threads: Large Language Models and their impact on the HEP community

Monday 15 April 2024 11:50 (1 hour)

Over the past year, Large Language Models (LLMs) have demonstrated remarkable capabilities, with ChatGPT rapidly becoming a buzzword on the Internet. These advanced models have been widely applied in various applications and services, recently appearing in scientific domains as well. In the High Energy Physics (HEP) community, GPT models have appeared at one of the key conferences: the latest Conference on Computing in High Energy and Nuclear Physics.

In this lecture, we will examine some foundational components of LLMs, focusing on the well-known GPT models and the techniques to fully leverage their capabilities. We will also review the initial footprints of these technologies within HEP. Starting with the fundamental question: "Can ChatGPT do physics?", we will quickly find that it can already recognize some coding templates from CERN's experiments. Additionally, we will discuss significant drawbacks of these models, such as model hallucinations, which could potentially limit their applicability in rigorous domains.

Finally, we will explore the use of LLMs in coding. We will highlight the challenges of using general LLMs for coding while demonstrating prompt engineering strategies designed to turn natural language generation into code generation and understanding.

Attended school

Number of exercise hours

Number of lecture hours

Presenter: VALENZUELA RAMIREZ, Andrea (CERN)