INFO 7375 - Neural Networks & AI

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What is generative AI?

Generative AI is a category of artificial intelligence systems designed to create new, original content that resembles the data they were trained on. Unlike previous forms of AI that primarily performed tasks like classification or prediction, generative models learn the underlying patterns, structure, and relationships within a vast training dataset which can consist of text, images, audio, or code. By understanding these intrinsic properties, the models are able to generate novel outputs that are not simply copies of the training data but are statistically likely continuations or combinations of those patterns, effectively demonstrating a form of digital creativity.

What is generative pre-trained transformers?

A Generative Pre-trained Transformer (GPT) is a specific and highly influential architecture of a Large Language Model (LLM). Its name is descriptive of its function: Generative means it creates text, and Pre-trained signifies that it undergoes an initial, massive, and resource-intensive training phase on a huge corpus of diverse, publicly available data (like the internet, books, and articles) to gain a broad and statistical understanding of language, grammar, and world knowledge. The key technical component is the Transformer architecture, a neural network design introduced in 2017 that relies on a self-attention mechanism. This mechanism allows the model to weigh the importance and relationship of every word in the input sequence to every other word, enabling it to maintain context and generate exceptionally coherent, long-range dependencies in the resulting text.

Do GPT and other generative AI system find answers to your prompt in the database?

No, the core functioning of GPT and other generative AI systems does not involve retrieving answers from a traditional database in the way a search engine or a data lookup tool does. Instead of accessing a store of explicit facts, these models contain their "knowledge" implicitly within their billions of parameters, the statistical weights and biases learned during the pre-training process. When someone provides a prompt, the model processes it by treating the text as a sequence of tokens and then statistically calculates the most probable next token based on the patterns it learned from its training data. This process is repeated thousands of times to assemble a coherent response.

What do you think about social impact of modern LLMs?

The social impact of these modern LLMs are quite unusual and different from other scientific inventions and tools. I can already see the signs of people getting depended on these tools to do almost everything. While it does make the people more productive and provides them the power to do tasks within less time, but the disadvantages are also quite significant.