MIDI 2025 Conference

How AI is Impacting Human Cognition: A Systematic Survey

Abstract

Advances in Artificial Intelligence (AI), particularly Large Language Models (LLMs) such as ChatGPT have emerged as an influential tool that is being used globally. This has particularly reshaped humans' knowledge retrieval, problem solving and decision making skills. While such tools offer unprecedented access to information and enhance overall performance, there also exists a critique that overdependency on AI is altering cognitive processes. This concept introduces a key term known as cognitive offloading. This refers to the delegation of cognitive tasks to machines and AI tools that are now capable of contextualizing information and generating reasoning in response to user queries or prompts. There are few related surveys on cognitive offloading, but they have limited scopes in terms of application or empirical settings, etc. This paper presents a survey of research on cognitive offloading conducted between 2021 and 2025, within the context of LLMs, in a systematic manner. Diversity exists in the reported methodology of selected research, that ranges from controlled empirical settings to large scale surveys and monitoring of brain activity using EEG signals etc. The paper also offers the mechanism of offloading in various scenarios and their linkage with selected research articles.

The published research indicates that use of AI increases performance accuracy, though, triggers reduced intrinsic and extraneous cognitive load. Similarly, it may degrade relational thinking, if overused. Overall, the paper provides insights on common and divergent points, highlighting critical areas that need to be worked upon in future