

What is the impact of artificial intelligence on the development and implementation of engineering software?



Name: Harun Miah
Id: 2207929

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Research Topic

What is the impact of artificial intelligence on the development and implementation of engineering software?

Problem Statement

Despite the advancements in artificial intelligence and its potential to revolutionize various industries, there is a lack of understanding on the impact of its integration in engineering software. This research aims to address this gap by investigating the benefits and challenges of incorporating artificial intelligence in engineering software, the impact on accuracy and efficiency, and the future trends and advancements in the integration of artificial intelligence in engineering software

Aim

The purpose of this study is to investigate how artificial intelligence may affect the creation and use of engineering software.

Literature Review

This literature study intends to investigate the impact of AI on the creation and application of engineering software, the advantages and disadvantages of its integration, and the upcoming developments and trends in this area.

By offering intelligent answers to challenging challenges, artificial intelligence has the potential to change the engineering sector. It has a wide range of uses in engineering software, from design optimization to modeling and simulation (Leu et al., 2017; Wu et al., 2020).

Computational fluid dynamics (CFD) is another field where AI has been successfully applied (Gan et al., 2018; Liu et al., 2021). By speeding up computing and lowering bias-related mistakes, AI methods can increase the accuracy of CFD simulations (Bilal et al., 2020; Zeng et al., 2018).

Literature Review

With a number of developments and trends anticipated in the upcoming years, the use of AI in engineering software has a bright future. One of the developments is the creation of explainable AI, which will enable engineers to comprehend the method by which AI systems make decisions (Xu et al., 2021).

The topic of structural engineering is one area where AI has had a substantial impact on engineering software. There is less need for physical testing and analysis when using AI to forecast how constructions will perform under various loads and environmental circumstances (Jia et al., 2021).

Literature Review

The creation of smart manufacturing systems is another area where AI is revolutionizing engineering software. To enhance production processes and raise the caliber of created goods, AI algorithms can examine vast amounts of data from sensors, machines, and other devices (Liu et al., 2020).

In the area of renewable energy, artificial intelligence is also having a big impact. The design and operation of renewable energy systems, such as wind turbines and solar panels, can be optimized by AI algorithms to increase their efficiency and lower their cost (Jafarzadeh et al., 2021).

Literature Review

Despite the advantages of implementing AI in engineering software, there are a number of difficulties in doing so. The absence of data, which is necessary for training AI systems, is one of the major problems (Abderrazek, 2013).

The ethical and societal ramifications of AI, which include concerns about prejudice, privacy, and security, are one of the primary difficulties (Wang et al., 2020).

Research Approach

Deductive research methodology, which entails evaluating a hypothesis drawn from previously investigated ideas, will be used to accomplish this goal. In this study, the deductive research approach was chosen because it enables testing of a particular hypothesis derived from current theories and prior research (Bryman & Bell, 2019).

Research Strategy

A comprehensive examination and analysis of the available literature on the use of artificial intelligence in the development and implementation of engineering software constitutes the literature review used in this study as the research methodology. The literature review was selected because it offers a thorough and in-depth overview of the body of knowledge and research on the subject, which is crucial for identifying research gaps and illuminating potential future directions (Fink, 2019).

Research Methods

In this study, available literature on artificial intelligence in engineering software development and implementation is gathered and analyzed using the systematic review methodology.

In this work, a content analysis approach is also used in addition to the systematic review to assess and classify the data

Conclusion

The study discovered that while incorporating artificial intelligence into engineering software has the potential to increase accuracy and efficiency, doing so also comes with a number of drawbacks and problems, including greater complexity and expense, potential ethical issues, and the need for more research and development. The employment of machine learning algorithms and natural language processing was one of numerous potential trends and developments in the integration of artificial intelligence in engineering software that the study found.

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