The Role of AI in Enhancing Circuit Design Automation

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Abstract. Artificial Intelligence (AI) is revolutionizing circuit design automation by introducing novel algorithms and methodologies. This paper reviews state-of-the-art AI techniques utilized in electronic design automation (EDA), emphasizing their impact on design efficiency and accuracy. By integrating AI, engineers can significantly reduce design time while maintaining high precision. The study presents case studies where AI has been successfully applied, leading to substantial improvements in design workflows.

Keywords: Artificial Intelligence, Circuit Design, Automation, EDA, Machine Learning

Introduction

The integration of Artificial Intelligence (AI) into circuit design processes marks a significant leap forward in electronic systems engineering. AI's ability to process large datasets and learn from them enables the automation of complex design tasks, reducing human error and accelerating development timelines. This paper explores various AI methodologies, including machine learning and deep learning, that are currently applied in Electronic Design Automation (EDA). We further discuss the challenges and opportunities presented by AI in this field, highlighting successful case studies that demonstrate increased efficiency and precision in circuit design.

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