

# AI Based Automatic Code Error Detection for Beginners

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**Abstract:** *Digital Twin Artificial Intelligence (AI) has significantly transformed the field of software development, especially in assisting beginners to learn programming more effectively. One of the major challenges faced by novice programmers is identifying and correcting errors in their code. Traditional debugging methods can be time-consuming and often require external help, which slows down the learning process. To address this issue, an AI-based automatic code error detection system is introduced to provide real-time analysis and intelligent feedback*

*The proposed system utilizes machine learning techniques and natural language processing to understand the structure and logic of the code written by users. It is capable of detecting various types of errors, including syntax errors, logical mistakes, and runtime issues. By analyzing large datasets of programming patterns and common mistakes, the system can not only identify errors but also suggest appropriate corrections, making it highly beneficial for beginners.*

*This approach enhances the coding experience by offering instant feedback, reducing dependency on instructors, and improving problem-solving skills. The system can be integrated into popular development environments and online coding platforms, making it widely accessible. Additionally, it promotes self-learning and helps users build confidence in programming.*

**Keywords:** *Artificial Intelligence (AI) Code Error Detection Machine Learning Natural Language Processing (NLP) Debugging Beginner Programmers Automated Code Analysis Intelligent Systems Software Development Programming Assistance*

