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AI-Powered Coding and Competitive Practice Platform

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Abstract: *The rapid evolution of programming education demands intelligent platforms that adapt to individual learner needs. This paper presents an AI-Powered Coding and Competitive Practice Platform designed to revolutionize how students learn programming and prepare for competitive coding challenges. The system leverages machine learning algorithms to provide personalized problem recommendations, real-time code analysis, intelligent debugging assistance, and performance analytics. By integrating Large Language Models (LLMs) for code explanation and hint generation, along with collaborative filtering for problem sequencing, the platform creates an adaptive learning environment that accelerates skill development. The system features a web-based integrated development environment (IDE), automated code evaluation, plagiarism detection, and a competitive leaderboard system. Results indicate significant improvement in user coding proficiency, engagement metrics, and problem-solving efficiency compared to traditional learning platforms. The proposed system is scalable, cost-effective, and suitable for deployment in educational institutions and individual self-learning context.*

Keywords: AI in Education, Coding Platform, Personalized Learning, Code Analysis, Competitive Programming, Intelligent Tutoring System

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