

Intelligent Tutoring System

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Abstract: *The Intelligent AI Tutoring System aims to revolutionize personalized learning by leveraging advanced artificial intelligence technologies, including machine learning, natural language processing (NLP), and adaptive learning models. Designed to dynamically adjust to the unique needs, preferences, and learning pace of individual users, this system enhances educational effectiveness through tailored pedagogical strategies.[2] The primary objective of this AI-driven tutoring framework is to foster interactive, customized learning experiences, improving engagement, comprehension, and knowledge retention. Through sophisticated data-driven analytics, the system evaluates learners' strengths, weaknesses, and learning behaviors, enabling the generation of personalized lesson plans, targeted feedback, and real-time academic assistance. The integration of AI-powered assessments and progress-tracking mechanisms ensures continuous monitoring, facilitating informed learning strategies and measurable performance enhancements.[3] Core functionalities include personalized recommendation systems, allowing users to log in and receive content tailored to their specific educational requirements. Additionally, an AI PDF analyzer has been incorporated to assist learners in resolving queries based on course-related digital sources. Furthermore, the system integrates conversational AI and immersive learning methodologies, enabling natural interactions for conceptual clarification, problem-solving, and tailored guidance. By employing state-of-the-art technology, this AI tutor seeks to bridge educational gaps, enhance equitable access to high-quality learning resources, and empower learners within adaptive, self-paced study environments. This paper presents a comprehensive overview of the system architecture, core functionalities, and implementation strategies essential for constructing an effective AI-driven educational platform, contributing to the ongoing advancement of intelligent tutoring systems in modern learning environments.*

Keywords: Intelligent AI Tutoring System, Personalized Learning, Machine Learning, Natural Language Processing, Adaptive Learning Models, AI-Powered Assessments, Progress Tracking, Conversational AI, Immersive Learning, Data-Driven Analytics, Digital Education

