MindMeld: A Code Collaboration Game

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Abstract: *This paper presents MindMeld, an innovative web-based educational game platform designed to enhance cognitive skills through interactive, gamified experiences. The platform features 30 levels organized into 10 distinct categories, each comprising three missions, totaling 90 challenges. Leveraging Flask (Python) with SocketIO for real-time communication, a SQLite database for persistent storage, and a responsive frontend built with HTML, CSS, and JavaScript, MindMeld offers a robust and scalable architecture. Key features include real-time multiplayer capabilities, progressive difficulty scaling, a comprehensive achievement system with badges, and an analytics dashboard targeting five cognitive domains: memory, logic, pattern recognition, spatial reasoning, and verbal processing. This paper explores the platform's architecture, game mechanics, technical implementation, and data-driven insights, positioning MindMeld as a valuable tool for cognitive development and educational research..*

Keywords: Educational Games, Cognitive Training, Web Platform, Real-Time Multiplayer, Learning Analytics