

Real-Time Excel Integration with Dynamic Chatbot Response Systems

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Abstract: *This study examines the convergence of conversational artificial intelligence and spreadsheet-based data management systems, presenting a novel framework for enhancing organizational data accessibility. The research introduces an architectural approach that bridges natural language processing capabilities with tabular data structures, facilitating intuitive human-computer interactions in enterprise environments. The proposed system employs a three-tier architecture: a persistent data integration framework that maintains bidirectional communication with spreadsheet repositories, a semantic processing engine that translates conversational queries into structured data operations, and an adaptive response mechanism that synthesizes analytical outputs into natural language dialogue. Empirical observations demonstrate that this integration paradigm significantly streamlines workflow automation and cross-platform data orchestration, while enhancing real-time analytical capabilities. The findings suggest that this unified approach to conversational data management represents a fundamental shift in how organizations can leverage their existing data infrastructure through natural language interfaces. This research contributes to the growing body of literature on human-centred computing and business process automation by presenting a scalable methodology for implementing conversational interfaces in enterprise data environments.*

Keywords: (NLP) natural language processing, business intelligence, Real time Integration with excel, Easy and instant query Solver, conversational AI