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Information Access to CTBTO Staff through Generative AI: A Smart Chat Application for Simplified Access to Complex Directives and Protocols

The Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) utilizes and oversees daily processes through a rigorous framework, relying on extensive procedural manuals, protocols, and regulatory guidelines. Accessing and interpreting these complex documents can be time consuming and require deep domain expertise, creating challenges for staff members across various operational and scientific functions. To address this, we present a Generative AI-powered chat application designed to enhance information accessibility for CTBTO personnel. The application enables users to ask detailed questions in natural language and receive structured, contextually relevant responses, with direct references to official documentation for verification. This tool allows for quick retrieval of critical information and improves efficiency in decision making, training, and operational workflows. To ensure accuracy and reliability, the system is utilizing the most efficient pre-trained Large Language Model (LLM), which has been provided with comprehensive CTBTO documentation from a specific domain. The LLM is configured to strictly adhere to these verified sources, ensuring that responses are derived solely from the provided materials. If the requested information is not available in the documentation, the system explicitly states that it does not have an answer rather than generating speculative responses.

This study highlights the infrastructure configuration, application architecture, usability cases and analytics monitoring system, alongside ongoing development efforts and key challenges.

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