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Development of a virtual assistant for shift operators of the BM@N experiment

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The paper presents the development of a virtual assistant for shift operators of the BM@N experiment. The main task of the assistant is to ensure prompt access to all necessary text materials during experimental runs, thereby reducing the need for manual searches and referrals to experts. The system is implemented based on semantic search using a hybrid approach that combines the advantages of dense and sparse embeddings of text obtained using the BGE-M3 model. The solution architecture is based on robust technologies with an emphasis on asynchronous processing. The user interface is implemented as a Telegram bot with internationalization support and a feedback mechanism for assessing the relevance of results. Testing on a synthetic dataset confirmed the system's ability to retrieve relevant information within the specialized terminology of the BM@N experiment.

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