Enhancing Quiz Apps with LLMs

The integration of Large Language Models (LLMs) like Llama 2 into quiz applications could transform them into intelligent, adaptive learning platforms. This research explores two applications of these AI models: dynamic question generation and user-centered learning support. Recent research by Hadzhikoleva et al. (2024) demonstrates how LLMs can automatically generate test questions based on specific educational requirements. Rather than relying on static question data, a quiz application could utilise Llama 2 to produce fresh content on various topics, maintaining user engagement through continuously updated material. The study shows that when integrated with platforms like Google Firebase, these models can create educationally relevant content efficiently (Hadzhikoleva et al. 2024). However, the research also identifies challenges regarding output quality, as LLMs may occasionally generate nonsensical or incorrect questions. Implementing a verification system to validate AI-generated content would be essential to maintain educational standards and provide proper questions without requiring manual review.

Multimodal LLMs (MLLMs) offer additional capabilities for personalised learning experiences. As Xing et al. (2024) discuss, these advanced models can process and generate text, images, and audio simultaneously. In a quiz application, this functionality could enable features like visual explanations for complex concepts or audio descriptions for accessibility. The research highlights how such adaptive feedback improves comprehension, especially in challenging subjects (Xing et al. 2024). Furthermore, MLLMs could enhance accessibility through features like content simplification and multilingual support, making the application more inclusive for a vast majority of users.

LLMs could also provide immediate, personalised feedback to quiz takers. When a user answers a question incorrectly, Llama 2 could analyse their response and generate tailored explanations that address specific misunderstandings. This instant feedback loop helps learners understand their errors and reinforces the right way of learning. The model could even suggest related practice questions that target the user's knowledge gaps, to help the user learn, instead of just marking answers as correct or wrong.

By incorporating Llama 2 for question generation and adaptive feedback, quiz applications could evolve into personalised learning tools instead of just a static quiz. With LLMs we can see the potential for automating content creation and enhancing user experience. Future developments might explore additional multimodal features, like generating powerpoints or video content, which further improves the learning experience for users.

References:

Hadzhikoleva, S, Rachovski, T, Ivanov, I & Hadzhikolev, E 2024, 'Automated test creation using large language models: A practical application', Applied Sciences, vol. 14, no. 19, p. 9125.

Xing, W, Zhu, T, Wang, J & Liu, B 2024, 'A survey on MLLMs in education: Application and future directions', Future Internet, vol. 16, no. 12, p. 467.