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Virtual Tutors as Digital Twins for Education

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Currently, Artificial Intelligence (AI) and more specifically generative models, are substantially criticized due to concerns about the lack of ethical regulation concerning its use and the impact that it could have on society. However, if applied correctly and ethically, AI could provide the opportunity for educators to automate repetitive tasks with stimulant new experiences for the students. The Department of Chemical and Biochemical Engineering at the Technical University of Denmark (DTU) offers a course in Good Manufacturing Practice (GMP) and quality in pharmaceutical, biotech and food industry. One of the activities performed during the course is an audit exercise, where students take on the role of an auditor inspecting a company (represented by the teachers), about their adherence to the quality management system. During the audit, students can ask questions regarding the practices adopted by the company, which is necessary information to evaluate whether the company in question could be a valuable business partner. The teachers' role is to answer the students' questions and show the available documentation, leaving the students to reflect upon the company's behavior in quality management. Audio recordings of the audits have been collected for two offerings of the course (2022/2023). In this work, we present an initial investigation and proof of concept of how AI-powered models can be used to automate educational processes. More specifically, we show how to fine-tune a pre-trained generative question-answering model on domain-specific data (the audit recordings previously collected).

The aim of this initiative is to improve students' learning experience and increase engagement through stimulating material and gamification, as well as to automate repetitive tasks and allow time saving for the educators.

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