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Creating a Chatbot for Radiation Safety Training in Radiotherapy

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Objective: An AI Chatbot was created for radiation safety training in radiotherapy. The Bot was for radiation staff, namely, radiation oncologists, medical physicists and radiotherapists, working in a cancer center, so that they could learn and refresh their radiation safety knowledge without attending the classroom session in the center. This is in particular important in the pandemic period, when face-to-face communication between hospital staff should be kept to a minimum.

Methods: The Bot was created on the IBM Watson Assistant Cloud platform. For a human-like communication between the Bot and the user, machine learning feature such as Natural Language Processing provided by the tool of Intent in the Watson platform, was used to determine the specific intent of the user's input. The Bot contained fifteen radiation safety questions, which could be customized according to training needs and timed to fit into the attention span of the end-user. For fine-tuning and commissioning, the Bot was pre-tested in various virtual meetings and conferences. Feedbacks from the test were used to further update and upgrade the Bot continuously.

Results: Using the Watson Cloud platform the Bot could be integrated into different channels such as Webchat, WhatsApp and Discord. The Bot was user friendly, and intentionally asked the name of the user and would use the name for further communication. When the user could not provide the expected response from the question, the Bot would provide guidance to the user and help him/her to give the correct answer. Finally, the Bot would report to the user the final results of the training and test, and provide suggestions to the user for further improvement.

Conclusion: A chatbot for radiation safety training in radiotherapy was created. The Bot could be accessed from any Internet of things to provide a convenient and efficiency knowledge transfer in radiation safety.

Author: Dr CHOW, James (University of Toronto)

Co-authors: Prof. SANDERS, Leslie (York University); Dr LI, Kay (York University)

Presenter: Dr CHOW, James (University of Toronto)

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