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An AI-assisted Chatbot for Education in Radiotherapy

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Objective: We built a RT Bot, a chatbot with characterization for the patient, general public and radiation staff to provide educational information regarding radiotherapy using the artificial intelligence. The Bot was personalized by machine learning to detect the user's temperament and intent in order to provide the best guidance to the user with a human-like response.

Methods: The Bot was developed using the IBM Watson Assistant functionalities on the IBM cloud. Dataset of information was prepared for different user groups such as descriptions of all processes in radiotherapy, promotion of cancer screening especially high fatality and popular cancer sites, and basic cancer preventive measures such as how to maintain healthy life with suitable diet and exercise. To ensure correct information can be understood and digested by the users with their background (patient, general public and radiation staff), the Bot character was personalized through the IBM Watson Assistant functionalities such as natural language understanding, entities and slots.

Results: The Bot can be operated in a front-end window on any Internet-of-things such as smartphone, tablet, laptop and desktop. In the beginning, the Bot will communicate with the user intentionally with an introduction. The user can then type in any text to answer concerning their enquiry. The Bot usually begins by answering simple questions regarding radiotherapy and providing related information. If the Bot cannot understand the user's wording, it will provide a guidance to help the user.

Conclusion: A chatbot was built for interdisciplinary educational purpose for the patient, general public and radiation staff using artificial intelligence and machine learning. The Bot may be used by a cancer centres or some private sectors such as high school, community centres, volunteer group and charities, which promote cancer preventive measures and screening for a healthy life or educate user what is cancer and radiotherapy.

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