

建置多人協作虛擬化內科系OSCE教案評量人工智慧 語音辨識系統

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摘要

在OSCE 醫學生的測驗領域當中人工智慧語音辨識尚未有著墨，以資源、整合的角度以及新興疾病之下近距離來的OSCE 不易進行等之考量下，將系列OSCE 資料庫線上虛擬化，可能是輔助教學測驗的解決方案。本計畫預計以內科系貧血、胸痛、水腫三合一的OSCE 教素為例，建置虛擬標準化病人AI 的系統，辨識考生及標準化病人各種之正確性，透過於OSCE 考場抄錄原地儲存在系統當中的去辨識OSCE 考試語意資料庫，建置機器深度學習自然語言處理模式，分析訓練後系統的正確辨識度，以作於未來以各種協作教素，虛擬的CE 考試之可能性。期望虛擬標準化病人的OSCE 系統，可以辨識來自於不同背景、不同說話模式的醫學學生們的CE 考試的語意。同時OSCE 虛擬系統預計可記錄、分析跟評分醫學生們，在OSCE 當中的問診及對虛擬標準化病人的回應的語意。用人工智慧相關的技術'並透過機器學習建置符合相關的記錄器，並藉由API 方式將研究成果，作為後續各種OSCE 虛擬系統線上全國分享的基礎建設。

Abstract

The application of artificial intelligent (AI) sound reignition system has not been widely used in medical OSCE. To organize medical resource and to adapt the challenge of the assessment limitation due to the frequency of newly developed infection diseases which might impact the conventional face-to-face OSCE. The creation of innovative virtual OSCE system is suggested as complementary assessment tools to ensure training quality of medical students.

This study plans to establish the combined internal medicine based virtual OSCE by integrate the anemia, edema, and dyspnea as one OSCE scenario. Firstly, the virtual standardized patient AI system need to correctly recognize the voice and sentence that trainee's response to virtual SP system. Through translate the enough amount of voice recordings files of previous OSCE, the accuracy of the OSCE response sentence can be established. After the deep learning (DL) and naturallanguage processing technique ofthe transferred OSCE response sentence, the AI SP virtual system will have the ability to recognize OSCE response from medical students with different accents and backgrounds. After DL training, the AI SP system can further response and evaluate the questions from medical students in the virtual OSCE system. In addition to mechanism learning, and NLP technique, the system will all apply API technique to expand the usefulness of the virtual OSCE system in nation-wide application.