

Health Informatics & Technology Conference

October 20-22, 2014 Double Tree by Hilton Baltimore - BWI Airport, USA

Evaluation of Google's voice recognition and sentence classification for health care applications

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This study examined how mobile technology could be used to improve patient flow and quality of care in perioperative services (Periop). Of particular interest is the use of voice recognition technology to enable Periop staff to record workflow milestones by speaking to the app (e.g., "patient ready", "H&P updated") and obtain information through verbal requests. The goal is to allow the Periop staff to provide care without being interrupted with data entry and querying tasks. This study explored the use of Google's voice recognition capability to accurately update the Pre-op checklist items in conjunction with classifiers (bag-of-sentences, support vector machine, maximum entropy). The experiments investigated three factors (original phrasing, reduced phrasing, and personalized phrasing) and each factor has three levels (zero training repetition, 5 training repetitions, and 10 training repetitions). Results indicated that personal phrasing yielded the highest accuracy and that there is improvement in accuracy when increasing the training repetitions from 0 to 5 and also from 5 to 10. Although simplistic, the bag-of-sentences classifier significantly improved the app's accuracy. Between the two supervised algorithms used to classify the output text, it was found that the maximum entropy algorithm is slightly superior to support vector machine. These results suggest that Google's voice recognition could be significantly enhanced by the use of post-processing techniques to enable its use in health care applications.

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