That Would Have Been Bad; Interactions With Speech Recognition Systems In Radiology

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Introduction

The Radiology Report is the main product/communication tool for Diagnostic Imaging interpretation in modern medicine [1]. A Radiologist interacts and collaborates with many digital and automated systems when recording their interpretation of diagnostic imaging [2, 3]. Here, we examine how radiologists interact with Voice User Interfaces such as dictaphones and speech-to-text software when authoring a report to construct a realistic "vignette" of practice [4].

Aims

The research aim is to assess how Radiologists and Reporting Radiographers interact with such safety critical systems in the real world for both appropriateness of design and pedagogical reasons. Often, these clinicians are not trained on every device required to author a radiology report. As such, there are elements of interaction and operation that are learned through "intuition" that may not be most effective.

Methods

We set up a facsimile reporting office at NIAW, complete with anonymised patient data and NHS Wales PACS software, and participants reported on anonymous studies whilst on camera.

The collected data was then subjected to thematic analysis by 2 researchers, before being presented back to a selection of participants for collaborative and collective analysis.

Results

We found that Radiologists are now responsible for all aspects of the reporting process from medical data analysis, to writing, then editing and finally proofing the reports before publication. This combines their clinical duties with administrative tasks, meaning having to split their cognitive focus repeatedly when authoring reports.

We also revealed there were no codified and recognised ways of writing or editing reports, leading to a variety of methods employed at each stage with varying levels of effectiveness and efficiency.

Conclusions

We conclude that:

1) Modern radiology has evolved rapidly, but Voice User Interfaces are often unfairly considered "intuitive" enough not to require dedicated attention and training.

2) Whilst personal style is an accepted aspect of reporting, the lack of defined methods of identifying and correcting mistakes means the most accurate way of proofing and editing is unknown

3) Current VUI systems lack appropriate and specialist ways of feedback that are appropriate for use in-situ

Next Steps

Further work needs to be done on developing, deploying and evaluating systems that take into account the idiosyncracies of practice and the new nature of report writing without medical secretaries

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