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Speech Recognition: Bauble or Key to Babel?

One of the strongest facets of current hospital reforms is a growing drive to raise the efficiency of information gathering and sharing at the point-of-care. Speech-recognition technology is a good case in point. It is convenient for healthcare professionals, who have traditionally relied on jotting down notes or speaking into a cassette recorder; these were then transcribed for filing in a computer database. The process was cumbersome and error prone.

Speech-recognition technology also helps a core function of the modern hospital – correlating medical records quickly, and now, increasingly, in real-time. Deployed at the front-end of data generation, speech-recognition increases the efficiency of medical reporting and documentation, on the quality of treatment, and on the accuracy of information – whether this is used for patient care or administrative operations such as billing and reimbursement.

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Healthcare professionals began using speech-recognition systems in the mid-1990s. However, the initial response was one of scepticism. Technology was in its infancy, and processing power limited (486-class CPUs were considered state-of-the-art). Background noise cancellation was elementary, dictionary sizes small, and overall accuracy left much to be desired. The high cost of the early systems (in many cases, above \$25,000) were also a barrier.

Neither were the first wave of speech-recognition systems user friendly. Known as discrete speech systems (rather than today's continuous speech systems), they required users to pause between each word (instead of speaking at a normal pace of dictation). Overall, users had to learn how to 'talk' to a computer rather than having the latter 'listen'. For the typically conservative physician, this was asking for the moon. As technology advanced through the 1990s and the current decade, the speech-recognition industry has adapted its offerings to the specific requirements of hospitals – seen as a potentially massive market. Increase in processor speeds and database size has been accompanied by dedicated subsystems for speech-recognition (regardless of accents, timbre or the occasional head cold).

Current continuous speech-recognition systems can handle over 150 words per minute, with accuracy levels of more than 98 percent. Aside from pure dictation, they can also be used for managing e-mail, launching programs and calling up files or records. In general, they increase productivity and reduce delays in tasking and information turnaround.

The reduction in errors from transcription makes one of the most powerful cases for wider acceptance of speech-recognition. So too do data protection standards in the healthcare sector. Unlike handwritten notes (or cassettes), patient information is enveloped within the ICT security umbrella and protected against unauthorised access. Yet another evident benefit for workflow efficiency is the fact that speech data can be accessed round-the-clock, from anywhere.

Electronic Medical/Health Record (EMR/EHR) projects will, however, play the most significant role in driving demand for speech-recognition technologies – as a closely associated, paperless facet of the emerging (and technologically seamless) healthcare system. Within EMR/EHR, voice-recognition technology can be integrated into search and query functions, document compilation, form filling, prescription and order writing.

In the near future, speech-recognition technology is expected to benefit the upcoming wave of pervasive, digital hospitals, with documentation created at patient's bedside terminals (or for that matter, in an ambulance). Conversely, the spate of investments in new ICT infrastructure at hospitals also makes them primed for integrating speech-recognition systems – and to leapfrog intermediate solutions such as digital dictation. (TS)

In March 1980, a futuristic version of the US Air Force's F-16 warplane was unveiled to showcase cutting-edge innovations. These included an automated manoeuvring attack system and a full-authority triplex digital flight control system.

Demonstrated too was what some observers billed a very "unusual" item - in the shape of a VCID (voicecontrolled interactive device) for the warplane's avionics.

The VCID claimed a "staggering" 90% success rate. However, the technology of the period limited its repertoire to 256 one-word commands. So

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too did real-world requirements: humans can hardly conduct intelligent discourse under the 5G-plus forces common to a fighter jet.

As always, the unkindest words came from a US Army soldier; few Air Force pilots, he said, had a vocabulary of more than 256 words.

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