TURNKEY DEVICE TO ALLOW FOR LIVE STREAMING OF SURGERY IN A HIPAA-COMPLIANT MANNER: USES IN EDUCATION, TRAINING, AND RESEARCH

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Background

Notes are used to convey medical information for billing purposes, derive diagnoses, and form a medical history for patients. They must be accurate, fungible, and easy to understand. Typically, these notes are created manually, with a surgeon relying on a combination of handwritten notes and computer databases. These methods may be time-consuming and prone to a variety of errors. An existing alternative is to use a scribe or AI scribe such as Dragon Medical One, by Nuance, though these do little to increase the accuracy of notes. The Angles™ system, by Hybridwerx, uses a combination of methods to generate more accurate medical notes in less time. This poster presents methods, features, and benefits of a new video-based note-taking system that is HIPAA compliant.

Features

HD Camera: Angles uses a 1080P camera with an onboard light to capture procedures. At 18 grams the camera is very lightweight — this is 75% less than a GoPro Max, or a little less than the weight of two US quarters.

Voice Recognition: The system uses a combination of advanced voice recognition software to transcribe what a surgeon says. These transcripts may be used in conjunction with other AI systems for analytics.

Wearable Design: The system is designed to be worn by surgeons, allowing them to easily capture information without interfering with the natural flow of patient care and leaving both arms and hands available for use in procedures.

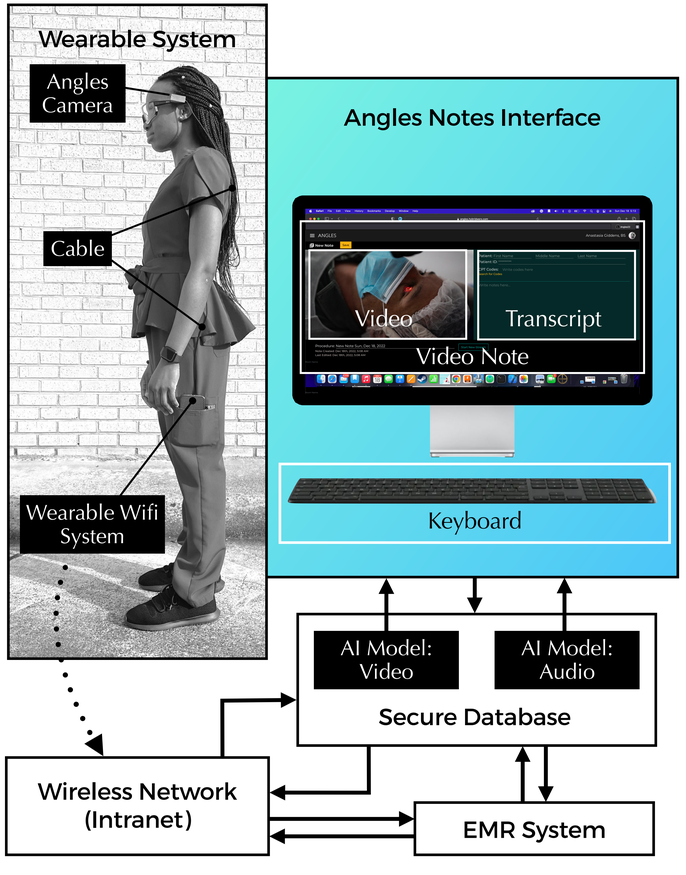
- **Wifi Enabled Device:** Early Angles prototypes were based around cell phone connectivity (as shown in the figure to the right). In this system, the surgeon would run a USB cable from the Angles camera to the phone placed into the pocket. For privacy and security reasons, this approach is replaced by a custom device that connects directly with a facility's intranet.

Secure Data Storage: All data captured by the system may be stored on the Hybridwerx Cloud, a facility's own infrastructure, or with a 3rd-party. The system de-identifies and encrypts all data and stores it in compliance with HIPAA.

Simple, Contextual User Interface: To create a note the wearer presses a button in the Angles notes interface and narrates the procedure — the system automatically timestamps and transcribes the narration.

Advanced De-Identification Tools: Certain health systems may prefer for faces or other identifying markings or information to be removed from the video. Additionally, de-identifying the video ensures privacy in education, research, and training environments.

System Overview



Benefits

All-in-One Design: This system is a platform consisting of hardware and software designed to work in tandem. Prior systems (Abu-Rmaileh, *et al* 2021) use a hodgepodge approach that requires the surgeon to create, manage, and secure the system. This creates a substantial barrier to widespread adoption and opens the surgeon or institution to more liability — effectively locking them out of the benefits of such a system.

Saves Time and Increases Access: The Angles camera streamlines the process of taking medical notes, allowing surgeons to spend more time with patients.

Improves Accuracy and Removal of Bias: A video-based note is a record that includes the context of a surgeon's intention & understanding, the patient's condition, and the environment. This is helpful in learning and other post-procedure environments as the sequence of events is not subject to recall bias.

Applications

Facilitating Communication: Using the system's live-streaming capabilities it can be easier for surgeons and researchers to communicate with each other, as they can see what each other is doing and provide feedback in real-time.

Enhancing Education and Training: Video notes enable surgeons to review and learn from past procedures. For continuing education, the recording surgeon can reveal their identifying info and take part in discussions around their video. Extending access to these notes to medical students, residents, and other trainees to proliferate best practices.

Supporting Quality Improvement Efforts: Video notes may be analyzed to identify areas for improvement and to develop best practices. This can be done manually or AI can flag anomalies that affect a standard of care. Partnering with a medical malpractice insurer can result in new risk profiles and risk pools that lower premiums for surgeons.

Acknowledgments

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