Digital stethoscope uses artificial intelligence for diagnosing lung abnormalities

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Stethoscopes are a ubiquitous and cost-effective tool for medical diagnosis, but they open the door to subjectivity and can experience high levels of environmental noise. This makes it difficult to properly diagnose lung abnormalities, like COVID-19, by listening to sounds from the body.

James West, at Johns Hopkins University, has been developing a digital stethoscope equipped with artificial intelligence for accurate lung diagnoses. He will discuss its opportunities and obstacles at the 179th Meeting of the Acoustical Society of America, which will be held virtually Dec. 7-10.

His talk, "A digital stethoscope with active noise suppression and automatic detection of abnormalities in lung sounds," is an invited keynote lecture and will be presented on Monday, Dec. 7.

The device is particularly useful for health care workers in highly populated areas or noisy clinics and for at-home testing of chronic respiratory patients. It can also help maintain social distancing and reduce physicians' exposure to COVID-19 by allowing recordings to be shared virtually with a care team in a different room.

"Because it can take recordings and telemeter them to physicians, clinical support can be provided for hard-to-reach areas or areas requiring increased medical support," said West.

The digital stethoscope also features noise suppression to enhance the auditory signal from the lungs, simplifying the diagnosis process.

"The noise suppression is a critical aspect that allows it to be used in even challenging clinics, like we see popping up with increased COVID hospitalizations," West said. "No training is required. Noise suppression runs automatically on the device and provides clear body sounds."

In tests of the device, physicians were found to favor it over 95% of the time compared to traditional techniques. Once the algorithm is further improved, the digital stethoscope can be distributed to the field.

More information: acousticalsociety.org/technical-program/

Provided by Acoustical Society of America

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