

Title: Noninvasive Respiratory Sound Analysis and Monitor System for Tracheostomy using Convolutional Neural Networks

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The respiratory monitor healthcare system has attracted considerable attention for many years. Owning the fact that chronic respiratory illnesses observed to increase gradually, relying only on X-ray imaging or CT imaging are not enough to diagnose completely. Before digital recording technology shows up, physicians use stethoscope for clinical diagnosis. The signal cannot be saved, detection by human also gives amounts of incorrectness.

Artificial intelligence in clinical diagnosis has become more and more important. Modern breath sound analysis is focused on digital sound processing and graphic representation of the signals. Therefore, our research is aimed at investigating the breath sound analysis of tracheostomy patients, using computational skills and algorithms for classification.

In this paper, we use sound detection module sensor to record sputum sounds from tracheotomy patients, preprocess the signal and analyze curated sounds by artificial and convolutional neural networks. Finally, we build a non-contact, real-time detection system with graphical user interface to detect if the tracheostomy patients need sputum drawing, then inform medical personnel immediately

Biography

Nai-Yun is a clinical-plus-technical master student in the graduate institute of biomedical electronics and bioinformatics, National Taiwan University. She is also a clinical AI researcher in Taipei City Hospital, an indicative medical center in the capital of Taiwan. Not only academic research, because of thorough discipline in bio-design program, she is also envolved in putting techniques into practice in clinical fields. She has published technical papers in international conferences and given public oral presentations both in Taiwan and abroad.

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