PRESS RELEASE

For immediate release

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Luxembourg Voice Technology Revolutionizes Respiratory Health Monitoring

Researchers from the Colive Voice Study Introduce a Non-Invasive, Low-Cost Digital Solution

Researchers at the Luxembourg Institute of Health have developed a novel digital voice-based biomarker for monitoring respiratory health, offering a non-invasive, cost-effective solution accessible via smartphones. This innovative technology promises to facilitate telemedicine by enabling rapid, real-time health assessments and improving patient outcomes.

In the latest development, researchers at the Deep Digital Phenotyping Lab (Department of Precision Health) and the Bioinformatics & AI Unit (DMI) have unveiled a digital voice-based biomarker designed to monitor respiratory quality of life. Published in the Biomedical Signal Processing and Control journal, this study demonstrates the potential of voice analysis as a rapid, non-invasive, and cost-effective method for assessing respiratory health.

The study revealed that vocal biomarkers can accurately predict respiratory quality of life, providing a viable alternative to traditional clinical questionnaires. By analysing voice recordings from 1908 participants, the researchers identified specific voice features that reflect respiratory health. The combined use of voice data and clinical information significantly improved the respiratory quality of life assessments, achieving an accuracy rate of 70.8%. The multimodal approach surpassed models using voice data alone by over 5%, and using clinical data alone by over 6%, marking a significant advancement in the field.

"*This innovative approach opens new horizons for remote health monitoring*," said Vladimir Despotovic, lead author of the study, from the Bioinformatics & AI group of the Department of Medical Informatics. "*Our digital voice-based biomarker offers a non-invasive, user-friendly, and cost-effective solution that can be used by anyone with a smartphone, making it accessible for widespread use.*"

The implications of this research are profound. The new digital voice-based biomarker can replace or complement traditional clinical measures, facilitating easier and more frequent monitoring of respiratory health. This method, which requires only a smartphone to record the voice, promises to reduce hospital visits and enable timely interventions by providing continuous, real-time health monitoring. This represents a significant step forward in telemedicine, offering a scalable solution for respiratory health monitoring that can benefit both patients and healthcare providers.

Dr Guy Fagherazzi, Director of the Department of Precision Health, emphasized the broader impact of this technology. "*This study demonstrates the power of combining voice analysis with clinical data to enhance the management of various respiratory conditions. It paves the way for a new era in telemedicine, where continuous, real-time health monitoring can improve patient outcomes and optimize healthcare delivery.*"

The advantages of this approach are manifold. It is non-invasive, requiring no cumbersome equipment, and cost-effective, utilizing readily available technology like smartphones. Its user-friendly nature allows patients to monitor their health from the comfort of their homes. Moreover, the scalability of this solution makes it ideal for healthcare systems to efficiently monitor large populations, ultimately leading to better health outcomes and reduced healthcare costs.

The Colive Voice Study, an international research initiative, focuses on leveraging voice recordings to improve health diagnostics and monitoring. By collecting standardized voice recordings and comprehensive health data, the study aims to develop cutting-edge tools for healthcare. This latest innovation is a testament to their commitment to advancing medical science and improving patient care.

The study was published in Biomedical Signal Processing and Control under the full title: "Digital voice-based biomarker for monitoring respiratory quality of life: findings from the Colive Voice study" (https://doi.org/10.1016/j.bspc.2024.106555).

Funding and collaborations:
The Colive Voice study is funded by the Luxembourg Institute of Health. Colive Voice recruitment is ongoing. Every person aged 15 years or more can participate, regardless of their health status. More information: www.colivevoice.org .

About the Luxembourg Institute of Health (LIH)

The Luxembourg Institute of Health (LIH) is a public biomedical research organisation focused on precision health and invested in becoming a leading reference in Europe for the translation of scientific excellence into meaningful benefits for patients.

The LIH places the patient at the heart of all its activities, driven by a collective obligation towards society to use knowledge and technology arising from research on patient derived data to have a direct impact on people's health. Its dedicated teams of multidisciplinary researchers strive for excellence, generating relevant knowledge linked to immune related diseases and cancer.

The institute embraces collaborations, disruptive technology and process innovation as unique opportunities to improve the application of diagnostics and therapeutics with the long-term goal of preventing disease.

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