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VOCAL BIOMARKER: AN INTELLIGENT HEALTHCARE AI

[1]Esha Yadav, [2]Akhilesh Kumar, [3]Avinash Singh, [4]Megha Shukla, [5]Anam Taufeeq, [6]Janey Alam
Department of Life Sciences, Axis Institute of Higher Education, Kanpur, Uttar Pradesh, India

Abstract
The field of Artificial Intelligence & Robotics in Life Science has undergone significant modernization, leading to a substantial increase in output. One of the most effective AI techniques in this sector is Vocal Biomarkers, which utilizes deep learning algorithms to detect various diseases related to the heart, lungs, and neural system such as Cardiometabolic and Cardiovascular disease, Parkinson's disease, Alzheimer's disease, Multiple Sclerosis, and more in their early stages by analyzing multilayered neural networks from a vast amount of data based on voice pitch, verbal vocalization, and non-verbal vocalization. It is important to note that disorders can have a significant impact on both immune and vocal health. This presentation provides an overview of diseases detected by vocal biomarkers, the type of speech recorder used, its technique and working process, as well as its potential for more effective use in the future within the healthcare sector.

Keywords: Robotics, Biomarkers, immune health, Cardiovascular, vocal.

Introduction

The development of AI is the key to open the new opportunities in the field of digital healthcare. The purpose of AI in this sector to make the treatment of people become easier and it helps to the healthcare workers that the diagnose pattern become less complex. Vocal Biomarker is an unique AI technique for analysis, diagnosis of disease by remote monitoring. It is a useful method to detect the diseases in their earlier stage. For example- Parkinson diseases, Alzheimer disease, Cardiovascular disease, Mental health, COVID- 19, respiratory condition, Dementia, Diabetes, Anxiety and other condition and symptoms. There are many applications of voice for health-related-purpose. The way of the communication is the ideal method to check the state of the human either healthy or have any disorder. In this way we discuss about the method of detection by vocal biomarker, its object and future scope.

Figure 01. Remote Monitoring

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Types and Names of some diseases that identified by Vocal Biomarker			
Neurological Disease	**Cardiovascular Disease**	**Mental Disease**	**Respiratory Disease**
Parkinson's Disease	Coronary Artery Disease (COD)	Stress	Asthma
Autism (Children)	Congestive Heart Failure (CHF)	Depression	Tuberculosis
Reading Dyslexia	Peripheral Artery Disease (PAD)	Post-Traumatic Stress Disorder (PTSD)	Pneumonia
Sclerosis	Cardiac Stroke	Schizophrenia	Lungs Cancer

Table 01. Identification of disease by vocal Biomarker

Figure 02. Show objective of vocal biomarker

Procedure

- The vocal biomarker is sensory dependable AI that can be used by remotely or touchless. Both AI and big data are used in vocal biomarkers to analyze signaling.
- Voice analysis is one of the ideal and primary way to detect patient's physical and neurological condition.
- Each algorithm that is detected by vocal biomarker is compared with thousands of data points of healthy persons and sick persons i.e. based on algorithms.
- The matching of algorithms signifies that the individual has specific condition. The abnormal condition occurs due to presence of bacteria, viruses or parasites or other reason like internal organ's disabilities like lungs, heart or brain etc.

For example when we detect the Coronary diseases with this procedure-

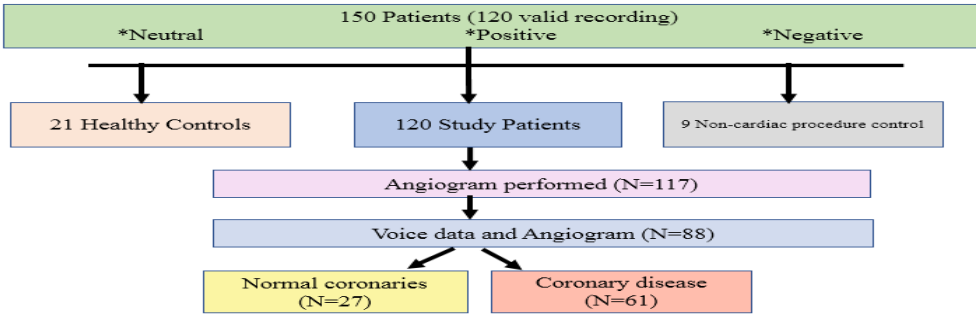

Figure 03. for example, of detect coronary disease

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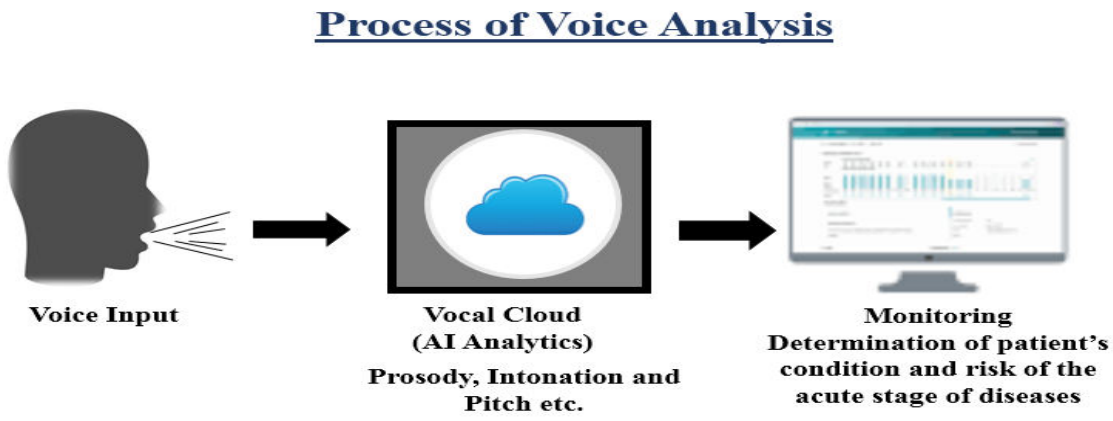

Figure 04. process of voice analysis

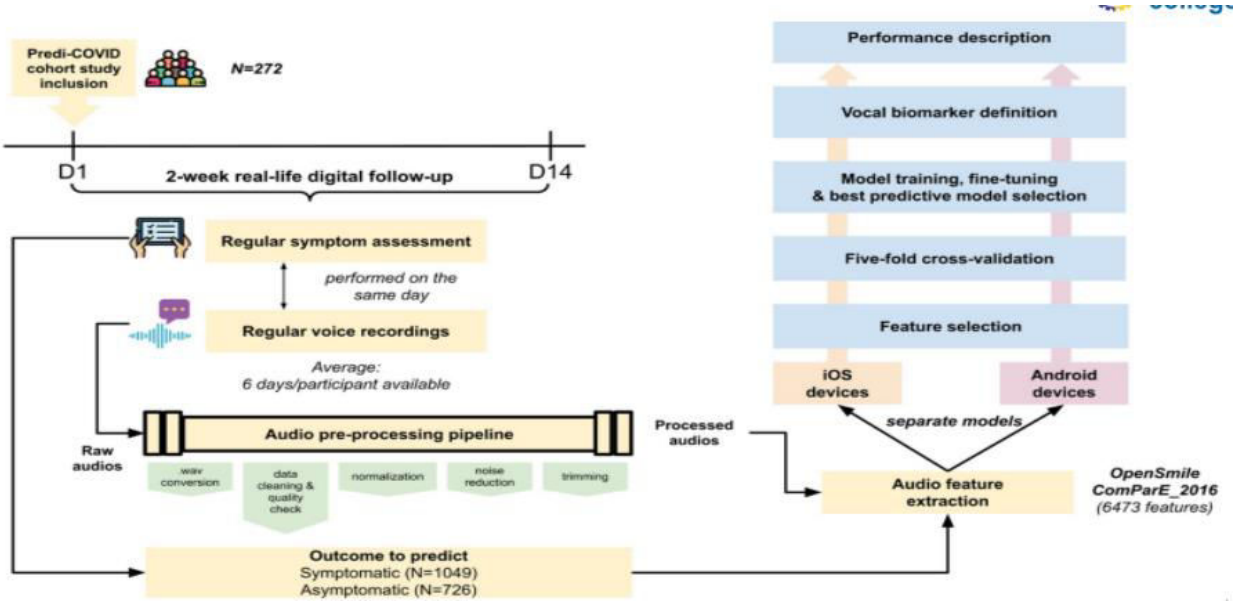

Figure 05. Outlet procedure of vocal biomarker

Conclusion

Within the healthcare sector, the Vocal Biomarker is considered crucial artificial intelligence due to the rising prevalence of cardiovascular diseases as the leading cause of mortality. Additionally, respiratory issues can also lead to chronic illnesses due to delayed diagnosis. Identifying the algorithm and detecting diseases in their early stages is a straightforward process. This method relies on speech patterns rather than the content of speech. The rhythms and prosodies undergo analytical procedures and are compared with algorithms developed from prior research and diagnoses

We deliberated on various healthcare goals. With the simplification of vocal biomarker utilization, its usage is expected to rise, thereby reducing the burden on healthcare professionals.

We have discovered that simplifying the technology used in clinical practices, such as making it more accessible on common devices like android phones, laptops, tablets, or Bluetooth speakers, can lead to increased usage for primary diagnosis procedures, self-

monitoring, and other purposes. The availability of high-value datasets, optimal research methods, and the personalization and privacy of recorded data are crucial for further advancements.

Future scope

Enhancements are required in every technology to simplify processes and maximize advantages.

- Easy usage like discussion or answering with smart devices can detect the neurological and vocal disorders.
- After diagnosis the results can easily check by patient to make it more convenient for his regular self-monitoring at home.

The diagnosis method and medication adjustment are determined by the voice content, which can help alleviate the strain on hospitals during a pandemic or in cases of acute illnesses.

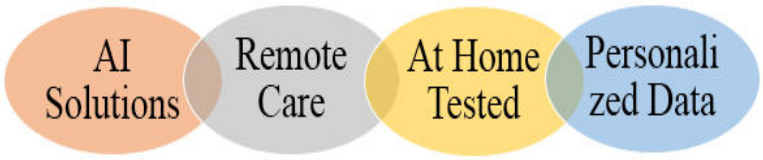

Figure 06 Different diagnosis method of voice content

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