

## Research Proposal

**Title: The use of Smartphone Audio and Artificial Intelligence to diagnose several health diseases**

**Authors: Naif A. Majrashi\* , Sanaa L. Kdida , Rahaf A.Jaribi , Aroob A.Idris**

Diagnostic Radiography Technology (DRT) Department, Faculty of Applied Medical Sciences, Jazan University, Jazan 45142, Saudi Arabia; [drsanaa3012@gmail.com](mailto:drsanaa3012@gmail.com) , [Raf.90@icloud.com](mailto:Raf.90@icloud.com) , [aroob3959@gmail.com](mailto:aroob3959@gmail.com)

\* Correspondence: [nmajrashi@jazanu.edu.sa](mailto:nmajrashi@jazanu.edu.sa) ; Tel.: +966-530-760-399

### Introduction

Artificial intelligence (AI) has made significant progress in various fields, including healthcare. However, its implementation faces challenges such as precision, resilience, and interpretability. AI algorithms rely on signal manipulation and analysis, which can convey visual or auditory data. While image-based methodologies are increasingly recognized, AI applications in healthcare using audio data remain limited. Current audio methodologies often prioritize speech data analysis due to the intricate interaction between anatomical structures and neurological processes. This research project aims to investigate the viability of using audio recordings from smartphones for diagnosing various health conditions, such as COVID-19, TB, stroke, Vitamin D deficiency, hypertension, diabetics, sleep disorders, and mental health diseases. Early detection is crucial for effective management and treatment, and traditional diagnostic techniques are expensive and lengthy, making them inaccessible to a large population, particularly in low-income countries.

## **Methodology**

The proposed method uses AI and deep learning techniques for audio detection, which has the potential to transform industries. Deep learning algorithms can identify intricate patterns in audio data without explicit programming, making them useful in speech recognition, music analysis, and security applications. They can convert spoken words into written text, detect various musical attributes, and initiate alert mechanisms. The method also involves a smartphone application that records and analyzes audio signals to detect features indicative of diseases like COVID-19, TB, and stroke. The user must place the smartphone near their mouths while speaking or breathing normally to record the signal, following specific instructions.

The proposed method involves collecting audio signals from individuals diagnosed with various diseases, analyzing them using machine learning and deep learning algorithms, and training these algorithms for future recordings.