



**Jyothi Engineering College**  
NAAC Accredited College with NBA Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

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NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

# Respiratory Diagnosis Using Federated Learning

**Department of CSE**

**Jyothi Engineering College**

**Thrissur**

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## Team Members

- |                     |            |
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## Vision of the Department

- Creating eminent and ethical leaders in the domain of Computational Sciences through quality professional education with a focus on holistic learning and excellence.

## Mission of the Department

- To create technically competent and ethically conscious graduates in the field of Computer Science and Engineering by encouraging holistic learning and excellence.
- To prepare students for careers in Industry, Academia and the Government.
- To instill Entrepreneurial Orientation and research motivation among the students of the department.
- To emerge as a leader in education in the region by encouraging teaching, learning, industry and societal connect.



## Introduction

- COPD, asthma, acute lower respiratory tract infections, TB and lung cancer are among most common causes of severe illness and death worldwide as per **WHO**
- Lung sound proves to be a proper diagnostic for detecting abnormalities in the Respiratory system
- Electronic stethoscope could record the patient's breathing sounds
- Classifying the sound into various categories using Machine Learning
- Federated learning based training methodology that could handle sensitive data for the requirement



## Objectives

- Easy diagnosis of Respiratory conditions
- Privacy oriented approach to conventional Machine Learning
- Implementing Federated Learning in the healthcare sector



## Problem Statement

“Respiratory diseases are pathological conditions affecting the organs and tissues that make gas exchange difficult while breathing. Due to a limited number of an experienced pulmonologist, it has been difficult to detect these diseases. Because of data privacy restrictions, conventional Machine Learning based techniques are not able to achieve the level of accuracy, comparable to a human counterpart”





## Area of the Project

- **Artificial Intelligence:**

Artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines, unlike the natural intelligence displayed by humans and animals.





## Skill sets Required for the Project

1. Machine Learning Fundamentals
2. Tensorflow
3. Federated Computation
4. Cloud Computing
5. Sound data Manipulation



## Conclusion

- We develop a Federated Learning based system that could help Doctors easily diagnose Respiratory conditions using sound recorded from Electronic Stethoscope



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# Thank You!