



INFORMATICS  
INSTITUTE OF  
TECHNOLOGY

INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER

## **Tuberculosis Detection from Chest X-rays**

A dissertation by

**Ms. Shalinka Wickramathilaka**

Supervised by

**Mr. Achala Aponso**

Submitted in partial fulfilment of the requirements for the  
BEng (Hons) Software Engineering degree at the  
Department of Computing.

May 2022

## Abstract

Tuberculosis (TB) has been identified as a huge threat to the public health, people dying from the disease in most poor and middle income countries. It kills over 4,000 people each day. Many of these deaths may have been prevented if tuberculosis had been detected and treated sooner. However, because each radiograph must be evaluated individually by adequately skilled radiologists, recent sophisticated diagnostic techniques like frontal thoracic radiography have remained prohibitively costly for broad usage. In the recent literature, there has been a lot of work on automating diagnosis by using deep learning (DL) algorithms on medical images. Furthermore, current deep learning outperformances provide considerable outcomes for classification tasks across a number of areas, but its capability for tuberculosis diagnosis remains limited. To improve performance, DL requires a large number of high-quality training data. TB chest x-ray (CXR) images are frequently of poor quality due to their low contrast.

As a result, in this study, we look at how effective Convolutional Neural Networks (CNN) is at detecting tuberculosis.

**Keywords:** Tuberculosis, Machine Learning, Deep Learning, CNN, TB Detection, RestNet