



**ATMIYA  
UNIVERSITY**

**Medical Image Analysis for Pneumonia Detection using  
Deep-CNN Multimodal & Transfer  
Learning Model – A Machine Learning Application**

A

Thesis

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by

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## SUMMARY

### **Chapter 1 - Introduction**

Chapter 01 gives the introduction of artificial intelligence Perspective, machine learning applications, background of the problem statements, objectives of the machine learning applications concentrating the field like medical etc. This chapter also introduces the concept of AI and its components like hardware, software and other technologies. In this chapter the research scholar has explained the use of machine learning in medical image analysis. At last the comparison between transfer learning and deep-CNN with other methods.

### **Chapter 2 - Literature Review**

**Chapter 2** includes the literature review of more than 45 papers on the machine learning, its applications and the image analysis. As an outcome of the review process the research scholar found some key points for the multi-parametric analysis, development of task-to –edge schedules, ML algorithms, and requirement of virtual machines. From the same the problem statement is identified which resulted in the motivation of carrying the research work. Finally the research scholar has targeted 4 objectives to be achieved for the successful completion of the research work.

### **Chapter 3 - Methodology**

**Chapter 3** explains the methodology to design the desired model for efficient task scheduling through python for machine learning application to analyse the image. Different model implementation of Deep-CNN, multimodal fusion techniques, transfers learning models for pneumonia detection in X-Ray images. He explored different platform to implement the machine learning process. Researcher included different dataset search and analysis to implement the same on the dataset.

### **Chapter 4 - Experimental Results and Analysis**

**Chapter 4** explains the comparative analysis of the different model implementation of machine learning application for the medical images especially on the Chest X-Ray for pneumonia detection. Another implementation on the md.ai dataset for the training and testing with mentioned accuracy comparisons with the standard results. Result comparisons of different pneumonia detection machine learning models like transfer learning model, Deep-CNN, VGG-16, ResNet152, Self-Attention, SE-Attenuation with the research scholar's model named VIYU

### **Chapter 5 - Conclusion and Future Work**

**Chapter 5** gives the overview & summary of the research mentioning the contributions, limitations & challenges, future directions to be implemented in machine learning direction. The research scholar also highlighted the future scopes in terms of use of CNN models for further improvement.