

X-ray Vision: Deep Learning for Predicting Pneumonia through In-depth Lung Opacity Examination

Project-III (IT208TPC31) report submitted to
Guru Ghasidas Vishwavidyalaya (A Central University)
in partial fulfilment for the award of the degree of
Bachelor of Technology
in
Information Technology

by

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30-04-2024

DEPARTMENT OF INFORMATION TECHNOLOGY
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CERTIFICATE

This is to certify that the project report entitled “X-ray Vision: Deep Learning for Predicting Pneumonia through In-depth Lung Opacity Examination” submitted by Swaraj Kumar, Suryam Kumar, Ritik Kumar Raushan (Roll No. 20107067 GGV/20/01468, 20107066 GGV/20/01467, 20107051 GGV/20/01452) to Guru Ghasidas Vishwavidyalaya (A Central University) towards partial fulfilment of requirements for the award of degree of Bachelor of Technology in Information Technology is a record of bonafide work carried out by him under my supervision and guidance during .

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Abstract

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Degree for which submitted: Bachelor of Technology

Department: Department of Information Technology

Thesis title: X-ray Vision: Deep Learning for Predicting Pneumonia
through In-depth Lung Opacity Examination

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Month and year of thesis submission: 30-04-2024

Chest diseases encompass a spectrum of conditions with varying degrees of severity. Pneumonia stands out as one of the most lethal infectious chest diseases, particularly affecting children. According to a 2016 report by the United Nations International Children's Emergency Fund (UNICEF), pneumonia claimed the lives of over 800,000 children under the age of five. This paper introduces a deep learning model architecture designed to detect pneumonia using chest X-ray images. The proposed model is built upon the DenseNet framework, specifically utilizing a 121-layer convolutional neural network. Leveraging the dataset published by the Guangzhou Women and Children's Medical Center, which includes chest X-ray images of patients aged one to five years, meticulously labeled by physicians with binary classes of Normal and Pneumonia. The model architecture incorporates DenseNet Model, three convolutional neural network (CNN) layers, and a global average pooling (GAP) layer,