

CHAPTER 10

A comparative study on “face mask detection” using machine learning and deep learning algorithms

Ashim Kumar Biswas¹ and Koushik Roy²

¹Institute of Engineering and Management (IEM), University of Engineering and Management Kolkata, UEM, Newtown, West Bengal, India

²The School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK, United States

10.1 Introduction

The necessity of donning face masks in public areas to stop the virus's spread has been highlighted by the COVID-19 pandemic. Enforcing face mask use has become essential as part of the health protocols. Automated systems that can determine whether people are wearing face masks are necessary because manual enforcement is time-consuming and not always practical. Using methods for image classification, artificial intelligence provides a workable answer. Face mask detection has been addressed by a number of machine learning (ML) and deep learning (DL) algorithms, each with specific advantages and disadvantages. In spite of the large number of these algorithms, thorough comparative studies assessing their efficacy in face mask detection are scarce. To close this gap, a number of well-known ML and DL algorithms for face mask exposure are reviewed and their performances are compared. Our attention is directed toward the convolutional neural network (CNN), a widespread DL algorithm, and outmoded ML algorithms like support vector machines (SVM), and k -nearest neighbors (KNN).

In the context of face mask detection, this study aims to clearly explain the capabilities and limitations of these algorithms. It may be considered to assist researchers and practitioners in choosing the best algorithm for their particular requirements by doing this. This paper has the following structure: first one examines the body of research on face mask detection