

I. INTRODUCTION

Coronavirus Disease 2019 or commonly known as COVID-19 emerged in 2019 and had a serious impact throughout the world. With this virus, the World Health Organization (WHO) enforces health protocols to prevent wider coronavirus transmission, such as maintaining a distance of 1 meter or more and wearing a mask when outside the home [10]. Wearing a mask will effectively block saliva droplets. Some studies have shown that wearing a mask can reduce the formation of infectious aerosols during coughing [10]. But the fact is that there are still many people out there who pay less attention to wearing masks outside the home and in public areas such as offices due to many factors including ignorance and lack of compliance with established rules [5]. To find out who is already obedient in using masks still requires manual inspection.

Based on these problems, it is very difficult to check the use of masks on the face manually. So creating a system that can detect the use of masks can be an option for early warning. Research on the detection of mask use has been carried out using various methods, one of which is entitled "A Deep Learning Based Assistive System to Classify COVID-19 Face Mask for Human Safety with YOLOv3" which was conducted in 2020 using a dataset of 600 images where 300 images of faces with masks and for the rest of faces without masks, the resulting accuracy is 96% with more than 4000 training periods [1] by producing the resulting average FPS of 17. While the case that occurs in the outside world is that there are three possibilities in using masks, namely using masks correctly, using masks incorrectly, and not using masks.

Based on previous research, this research was made by differentiating the datasets tested using YOLOv4 with test scenarios on single-object and multi-object by conducting three dataset groupings as follows, namely testing faces with correct mask use, incorrect mask use, and not using a mask. The purpose of this study is to design a system that can detect the use of correct masks, the use of incorrect masks, and not using masks using YOLOv4 and analyze the performance of the system in detecting faces using correct masks, using incorrect masks and not using masks in the hope of preventing the spread of COVID-19 using the YOLOv4 method.