## ABSTRACT

Social distancing is an effort to maintain distance, reduce physical contact between individuals or groups with the aim of preventing the transmission of various diseases, one of which is the Covid-19 virus. The world has been contaminated by this virus. Social distancing can help Indonesian people to break the ropes of the spread of the Covid-19 virus. In this final project, we will discuss the social distancing detection system and mask detection in a restaurant.

The simulation is carried out on a camera installed in the room which simulate a restaurant. The camera can detect the application of social distancing and the use of masks. The camera will detect objects in the form of persons using the You Only Look Once (YOLO) algorithm and calculate the distance between detected individuals using the Euclidean Distance method. The system can detect the face of everyone using the Haar Cascade and classify the use of masks or not using the Convolutional Neural Network (CNN) algorithm. If the detected individual maintains a safe distance from other individuals and uses a mask, it can be ascertained that the individual is implementing social distancing and using masks.

The system can detect violations of social distancing and the use of masks between persons. The results of the YOLOv4 training model at a ratio of 90%:10%, max batches of 6000, and learning rate of 0.001 got a mAP of 49.02%. As for CNN, it was obtained with a ratio of 90%:10%, batch size 256, and learning rate of 0.0001 got an accuracy of 98%. When the camera is parallel to the YOLO object, it has a 100% accuracy rate, in the case where the camera is located above the object, an accuracy of 77.8% is obtained. While CNN with a range of distance between faces with a camera of 100 cm to 300 cm had an accuracy rate of 80.36%.

**Keywords:** Convolutional Neural Network, Covid-19, Haar Cascade, Social Distancing, YOLO.