ABSTRACT

Personal Protective Equipment (PPE) is a tool used to protect a person by isolating part or all of the body from potential hazards in the workplace (Regulation of the Minister of Manpower and Transmigration of the Republic of Indonesia No. PER.08/MEN/VII/2010). An option to control the hazard is to wear personal protective equipment such as head protection, gloves, fall protection and gaiters. In the K3 concept, the use of PPE is the last resort or last resort in accident prevention. However, field technicians' lack of self-awareness to use protective devices can lead to work accidents. To increase self-awareness, on these problems, this final project designed a PPE detection system.

One of the methods used for object detection is the You Only Look Once (YOLO) method. So, the research in this Final Project was made using the YOLO method. YOLO works by looking at the entire image once, then passing it through the neural network once and detecting the object immediately. The output of this Final Project is a detecting system that can detect field technicians who use PPE and those who do not use PPE, and can be applied in the work environment. This system was created using the YOLO V5 method by creating labeling and bounding boxes on the image dataset and displaying notifications in the form of text (helmets, no helmets, gloves, no gloves, shoes, and no shoes) to field technicians.

From the test results, it shows that the system can display notifications of the presence or absence of the use of PPE for field technicians carried out in 2 scenarios with an accuracy value of 97% with a processing time of 0.3 seconds. And the results of testing on all images carried out in 2 scenarios show that the highest average precision value is 100% in scenario 1 with an average processing time of 0.1 seconds and the lowest average precision value is in scenario 2, namely 94% with an average the average processing time is 0.5 seconds. With this system, it is hoped that many field technicians will be aware of the use of PPE and minimize work accidents.

Keywords: *PPE, YOLO, technicians, object detection.*