

## **ABSTRACT**

Congestion is one of the most common problems, especially in big cities. Congestion occurs because of the mobility of people is very high and not in accordance with the capacity of the road. A lot of methods to avoid congestion, such as CCTV access that has been installed on the roadside by the city government, and crowdsourcing applications to report congestion on a road. However, there are still some unresolved issues, including the lack of practical access to congestion information on CCTV and crowdsourcing applications that are highly dependent on the number of users and some accuracy issues of information provided by humans when reporting congestion.

In this final project, a congestion identification system on highways using CCTV cameras that have been installed by third parties like government and Jasamarga, and IBM Watson Visual Recognition that can classify an image into certain classes like classifying traffic jams with digital image processing taken from CCTV data. Also, the application of congestion information system on the Android platform to facilitate users accessing congestion information easily.

The design of congestion information system application can work as expected, with MOS value above 4 or categorized as good and crash rate of 0%. Applications can be used to monitor congestion with 96% accuracy and the system can update congestion statuses with an average time of 6.73 seconds per IP Camera. The server is optimal with the number of users accessing the application simultaneously under 226 users with packet loss below 5% and server availability above 90%.

**Keywords:** IBM Watson, Visual Recognition, Congestion, CCTV, Information System