

ABSTRACT

CTC (Centralized Traffic Control) is a railway signaling control system originating from North America. One of the features in CTC is that it can determine whether the train signaling conditions are running normally or there is a disruption. In CTC there is a display of train and rail signals whose conditions are adjusted to the conditions in the field. When there is a signaling failure in the field, it will provide an indication on the CTC, this indication will be a reference for operators and maintenance technicians in making repairs. The problem at this time is that monitoring signaling conditions via CTC can only be done in the control room so that operators and maintenance technicians need a long time if there is a problem.

This study aims to facilitate operators and maintenance technicians in monitoring CTC signaling conditions, an internet-based monitoring system is needed that can be accessed via smartphone. With this system, operators and maintenance technicians can monitor signaling conditions more quickly and efficiently without having to be in the control room. In addition, this system is equipped with security features that limit user access, so it can minimize important data leakage.

The CTC data retrieval process that we created to be displayed on smartphones is by taking data from SCADA (Supervisory Control and Data Acquisition) software called PcVue. The data taken is in the form of rail indications and train signals as many as 14 signals that have values 1 and 0. Value 0 means that the signaling is in normal condition by showing gray on the rails and red on the signaling, while value 1 means that the signaling is experiencing interference detected in the field by showing yellow on the rails and green on the signaling. For overall interference, the rails will show red and the station is disabled. This data is then processed into SQL (Structured Query Language) and stored in Microsoft SQL Server Management Studio. Furthermore, the SQL data is sent to Firebase as a cloud database to store data changes. In order for the data to be received by Firebase, this SQL data must be converted into JSON format using a Python script. The data that has been stored in Firebase will be pulled into Flutter so that it can be displayed on the smartphone. The display accuracy on the smartphone has a 100% accuracy rate with that displayed on PcVue with an average data transmission duration of 10 seconds and a maximum transmission time of 14 seconds.

Keywords: CTC, Monitoring, Smartphone