ABSTRACT

One of the most important factors on mitigating disasters is response time which might differentiate between life and death. Longer response time also affects larger losses in terms of material. Bandung as one of big cities in Indonesia, suffers from traffic problem, which could affect the response time of emergency vehicles when dispatched to the emergency location, especially for larger emergency vehicles, such as firetrucks. In 2021, material losses caused by fire cases in Bandung city reached up to IDR 56 billion (approx. USD 3.5 million), highlighting the urgency of increasing responsiveness on dispatching firetrucks as soon as possible. To overcome this problem, geographic information system (GIS) combined with real-time traffic information can be used to find the most optimal route. Up to now, there is no navigation assistant platform that can be used specifically for emergency vehicles, such as firetrucks since emergency vehicles have different privileges on the road. In this work, a platform, named SITIKAR, that could assist firetrucks on choosing the fastest and most optimal route is built. SITIKAR shows the most optimal route for firetrucks in Bandung city by analyzing the geographical condition combined with current condition of the road. The comparison results show that the route generated by SITIKAR is well-compared with another popular navigation assistant platforms and shows promising results.

Keywords— Emergency Vehicle Routing, Traffic Congestion, Shortest Path, Geographic Information System, Navigation Recommendation System