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Spatio-temporal modeling of traffic congestion triggered by incidents

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Traffic congestion has become a substantial issue in major urban spaces, which has significant adverse environmental, social and economic impacts to the modern civilization. Traffic congestion triggered by incidents is predominantly challenging because of its haphazard occurrence in different places at a certain period that exploits the functional influences of the congestion on communal and financial events. In Australia's main cities, around 50% of traffic congestions are caused by various traffic incidents such as vehicle crashes, breakdowns, road works, lane blockages, extreme weather events, etc., where the same condition has been seen in many other cities of the developed nation. As a recent improvement to transport safety and efficiency, the mitigation of vulnerability to road and traffic congestion caused by traffic incidences is becoming a major task to make sure sustainable breathing space in cities for near future. Among the various types of incidences, vehicle crashes are a significant factor all over the world. The spatial and temporal pattern of traffic congestion triggered by vehicle crashes seem to be an under examined field of study. This research aims to discover the connection between traffic congestion and vehicle crashes by using a spatial temporal modeling approach. The fundamental concept of shockwave theory will be used in this study to model spatial temporal scenarios which is one of the best approaches for traffic modeling. This research will also attempt to provide some intervention strategies to mitigate vulnerability to traffic congestion in response to vehicle crashes, as a contribution to future urban transport management and planning.

Biography

Arfanara Najnin has completed her MSc from University of Muenster, Germany in 2014 and New University of Lisbon, Portugal under the Erasmus Mundus Scholarship funded by European Commission. Currently she is pursuing her PhD in Department of Spatial Sciences at Curtin University, WA, Australia supervised by Dr. Cecilia Xia. She has three and half years of work experience in the field of research and consultancy.

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