RESEARCH PROPOSAL

A vehicular network based intelligent transport system for smart cities using machine learning algorithms

Smart cities and the Internet of Things have enabled the integration of communicating devices for efficient decision-making. Notably, traffic congestion is one major problem faced by daily commuters in urban cities. In developed countries, specialized sensors are deployed to gather traffic information to predict traffic patterns. Any traffic updates are shared with the commuters via the Internet.

Such solutions become impracticable when physical infrastructure and Internet connectivity are either non-existent or very limited. In case of developing countries, no roadside units are available and Internet connectivity is still an issue in remote areas. Internet traffic analysis is a thriving field of study due to the myriad ways in which it may be put to practical use. In the intelligent Internet-of-Vehicles (IOVs), traffic congestion can be predicted and identified using cutting-edge technologies.

Using tree-based decision-tree, random-forest, extra-tree, and XGBoost machine learning (ML) strategies, this research proposes an intelligent-transport-system for the IOVs-based vehicular network traffic in a smart city set-up. The suggested system uses ensemble learning and averages the selection of crucial features to give high detection accuracy at minimal computational costs, as demonstrated by the simulation results.

For IOV-based vehicular network traffic, the tree-based ML approaches with feature-selection (FS) outperformed those without FS.The stacking model outperforms the KNN (96.6%) and the SVM (98.01%) in terms of classification accuracy. Dos and Sybil are just two of the many possible attacks on this work. In future, this work would be used to evaluate the performance of the other resources of smart-city like Environmental Conditions, Energy Consumption, Healthcare and Security Surveillance, etc.