# Machine Learning Approaches to Traffic Accident Analysis and Hotspot Prediction

This paper out of the University of Evora, Portugal, analyzes and creates a model on the severity of accidents, defined as No Victims or With Victims. Using a two-step approach of clustering followed by a model, they found that a Random Forest generated the highest accuracy of 0.73 and precision of 0.44. Their model found that pedestrian accidents and motorcycle accidents have the highest chance of resulting in victims.

# Inferring high-resolution traffic accident risk maps based on satellite imagery and GPS trajectories

Using non-standard data, such as satellite imagery and GPS data, this MIT-led paper generated a risk map to predict accident prone locations. Generating an end-to-end deep model, the team establishes similarity between locations to generate trends that are not present in historical data, with these trends being verified using future data. For Los Angeles, the model sees a precision of 0.4767 and RMSE of 39.11\*10^-6.

# High-Resolution Road Vehicle Collision Prediction for the City of Montreal

In this paper from Concordia University in Montreal, the road vehicle collision prediction problem was framed as a classification problem using the measure of probability as a risk of an accident. 2.3 million negative (no accident) examples were generated to balance the positive (accident) examples. Using the Balanced Random Forest algorithm, the model predicted 85% of vehicle collisions with a false positive rate of 13%.