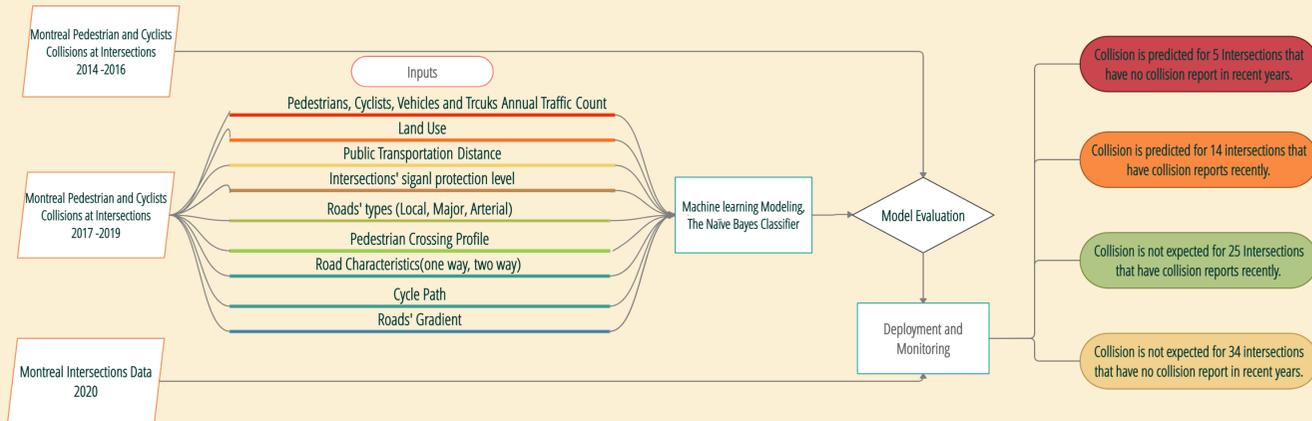


The Pandemic Changed Collisions!

Pedestrians Cyclists Safety



What is it?

During the Covid-19 pandemic, the change in urban traffic behavior is an undeniable fact. To find whether there are any abrupt changes in the safety of non-motorized transportation, Montreal pedestrian and cyclist collisions at intersections through the last 3 years before the pandemic is studied.

How it works?

Since transportation safety studies highly depend on traffic volume, in this study, intersections equipped with traffic counter facilities are taken into account. The modeling phase is based on the 2017-2019 traffic behavior and it is tested by the 2014-2016 period. The chosen Naïve Bayes Binominal Classifier gave an almost 80% accuracy rate to its predictions. Implementing the model on the 2020 datasets shows noticeable changes in the non-motorized safety of intersections.

Outcomes

Responding to the 2020 traffic counts, the model shows considerable changes in intersections collision behavior. 59 points are now expected to not experience collision given 2020 traffic conditions, while 19 other intersections are predicted as risky points. 3 out of these 19 intersections, do not have any collision report in their 5 years history, but now collision is predicted by a 0.7 confidence level. Further investigation is highly recommended for the risky point, however, here just as examples, two sites are discussed briefly.

What is new and distinctive about your project?

Besides the volume of pedestrians, cyclists, vehicles, and trucks, the research aims to define subsidiary characteristics of intersections to develop a reliable model. The model inputs have been sorted according to their significance, in the following flowchart:

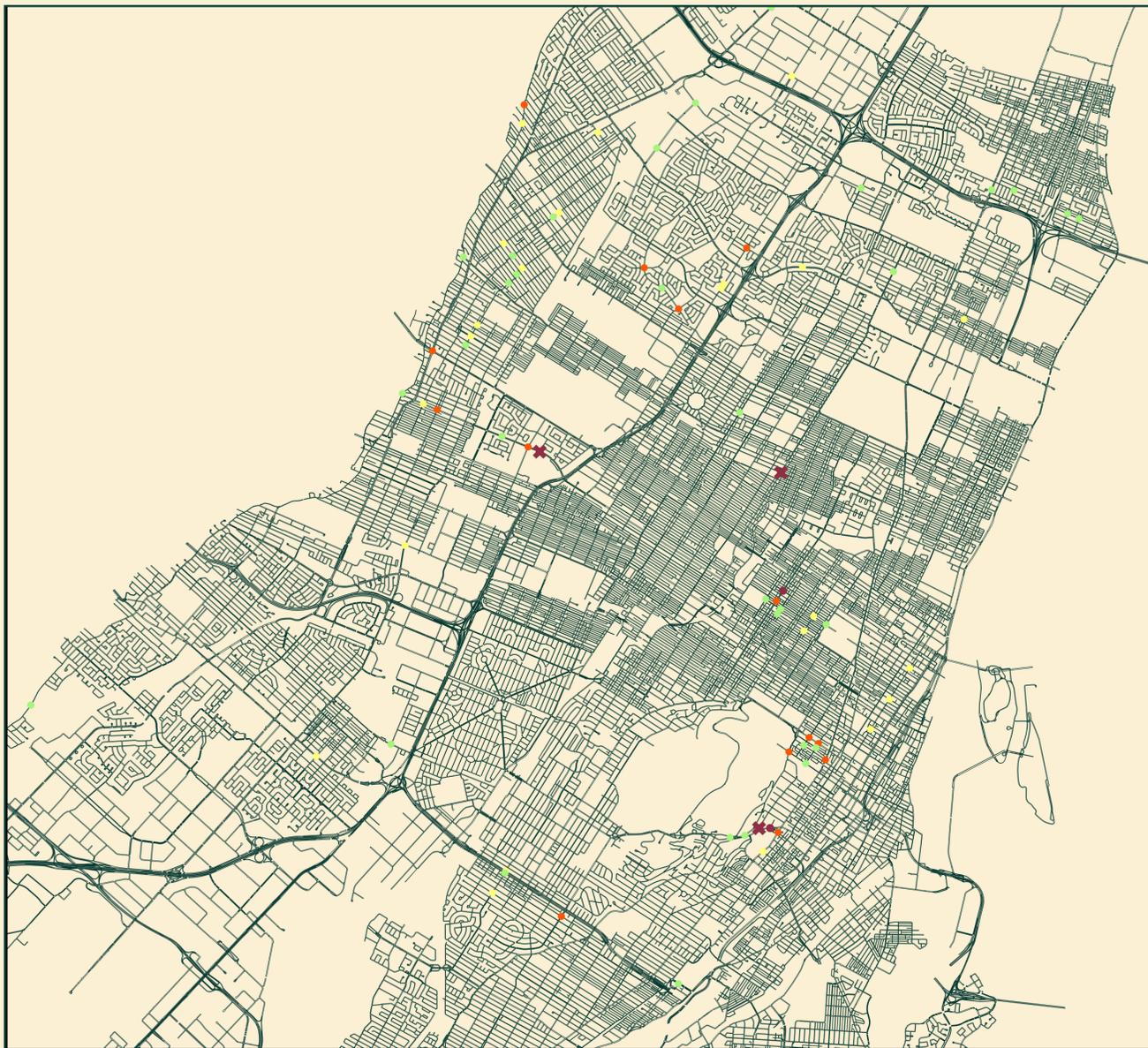


Figure 1) Model Output Illustration.

- ✘ Risky intersection, with no collision report in recent 5 years.
- Risky intersection, with collision report in recent 5 years.
- Collision is not expected, with collision report in recent 5 years.
- Collision is not expected, with no collision report in recent 5 years.



Figure 2) 8e Avenue, Rosemont Blvd, Montreal

- Pedestrian crossing profile should be raised, paved and painted in black and yellow stripes.
- Skew angle pedestrian crossing, relocation is needed.
- Visibility issue at the corner, fencing is recommended.

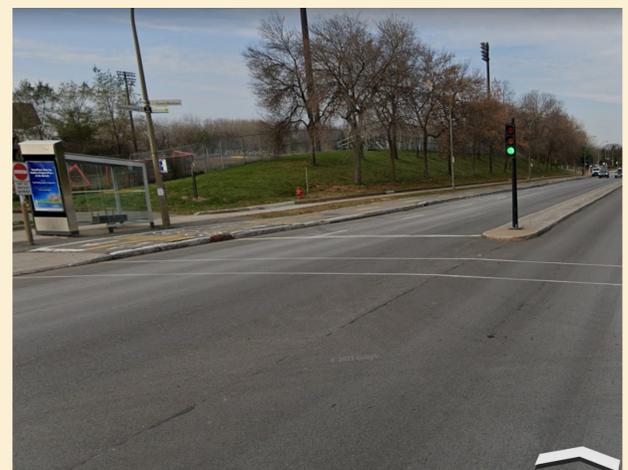


Figure 3) Ave Christophe-Colomb, Montreal

- Regular maintenance for Zebra Crossing for all directions.
- Flashing lights are highly recommended.
- Dual lamps in the median is suggested.

Authors:

Reza Riahi Samani, M.Sc., Concordia University

Luis Amador Jimenez, Ph.D, Associate Professor, Concordia University

Course: Big Data Analysis for Smart City Infrastructure, Mazdak Nik-Bakht, Assistant Professor, Concordia University