The Intersections

Windsor

Dorchester Road and Huron Church Road
Totten Street and Huron Church Road
Malden Road and Huron Church Road

Detroit

Dragoon and Fisher Fwy Ser Drs
Lafayette Boulevard and Waterman Street
Grand Blvd W and Jeffries Fwy NSD
Grand Blvd W and Jeffries Fwy SSD

Turning Movement Count

Introduction

A "Turning Movement Count" (TMC) is a count of all vehicles that have moved through an intersection. Miovision's computer vision solution allows organizations to track the movement (Left turn, Right turn, U-Turn or Through) through an intersection that is equipped with our 360° camera, a SmartSense and a SmartLink.

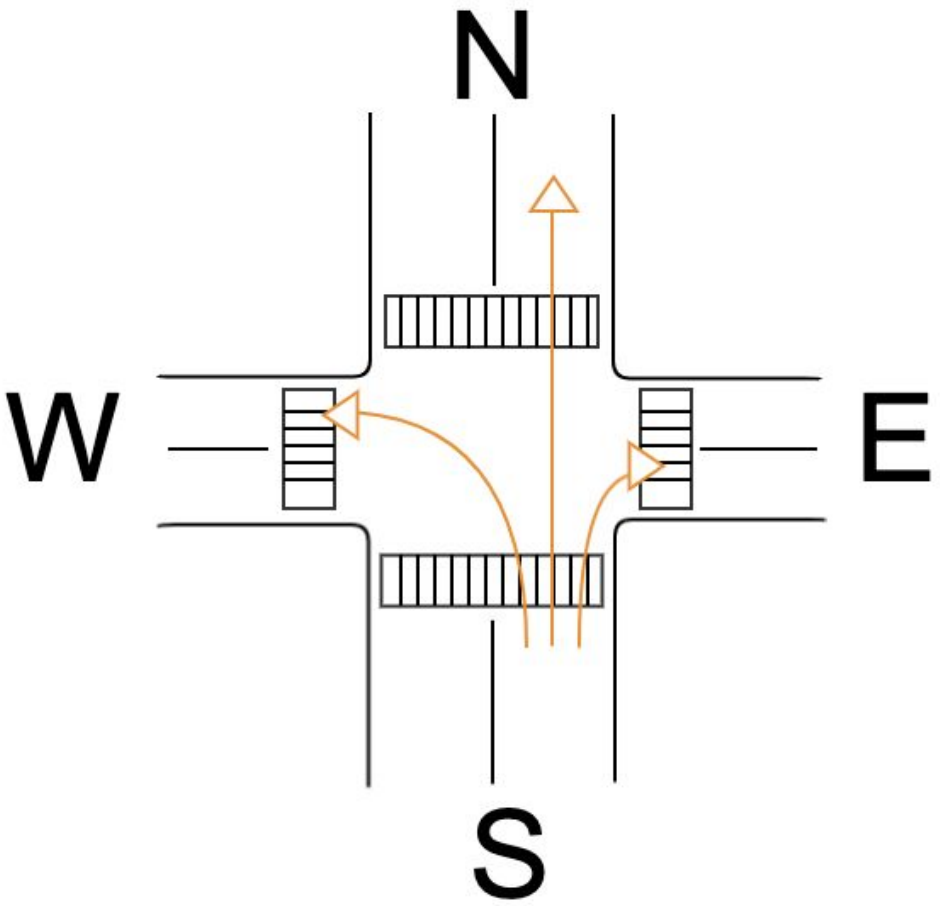

Figure 1: An illustration of an intersection with a left turn (LT), right turn (RT) and through (THRU) movement examples. In this example, the vehicles are travelling in the north-bound (NB) direction.

The Data

The data have been split into training (December 1, 2019 - January 31, 2020) and test sets (February 1-29, 2020), with one train file and one test file for each of the 7 intersections. The parameters for this dataset are defined as follows.

Column	Sample Output	Description
Intersection Name	Dorchester Road and Huron Church Road	Name of the intersection.
Intersection ID	2fbf	Unique ID for the intersection. **Join Key**
dt_bin	2020-02-01 00:00:00	The timestamp (UTC) of the bin. Data are binned per 15 minutes. **Join Key**
Direction	EB	The direction of travel when the vehicle enters the intersection.
Movement Type	RT	Type of movement the vehicle makes such as LT (Left Turn), RT (Right Turn), THRU (Through), U-TURN.
Vehicle Classification	Car	Type of vehicle detected.
Number of Vehicles	72	The number of vehicles that are counted that make such a movement in that direction during the 15 minute bin.

You should be able to join these TMC datasets with the travel time data provided using the Intersection ID and dt_bin columns.

Travel Time

Introduction

Travel time is a measure of how long it takes a vehicle to travel from one intersection to another intersection. Miovision Travel Time uses WiFi sensors, enabling us to measure travel time between any two intersections equipped with our SmartLink communication device. It's important to note that these sensors capture only a fraction of all wifi devices that travel through an intersection. This means that the data provided is a subsample of all trips between two intersections.

The Data

We provide travel time measurements between 3 intersections in Windsor and 4 intersections in Detroit, and vice versa. Note that we are only providing you with travel time measurements across the border and have excluded travel time measurements between intersections located within the same city. There are a total of 24 pairs of source-destination measurements. This is the first time we have calculated travel time across the Canada-US border.

Similar to the TMC data, the data have been split into training (December 1, 2019 - January 31, 2020) and test sets (February 1-29, 2020). There are two files for the travel time data, one for the train data (*Travel Time - train dataset - Raw.csv*) and test data (*Travel Time - test dataset - Raw.csv*). The dataset contains one record for each WiFi signal we measure about both the source intersection and destination intersection. The parameters for this dataset are defined as follows.

Column	Sample Output	Description
Source Name	Dorchester Road and Huron Church Road	Name of the *source* intersection, which is the starting point for a trip
Source ID	2fbf	Unique ID for the *source* intersection. **Join to Intersection ID**
Destination Name	Grand Blvd W and Jeffries Fwy SSD	Name of the *destination* intersection, which is the end point for a trip.
Destination ID	5c5f	Unique ID for the *destination* intersection. **Join to Intersection ID**
Start time	2020-01-31 00:00:48	The timestamp (UTC) when we first detected the vehicle at the *source* intersection. **Can join to dt_bin**
End time	2020-01-31 00:17:41	The timestamp (UTC) when we first detected the vehicle at the *destination* intersection. **Can join to dt_bin**
Travel time (Seconds)	1013	The total travel time between the source and destination intersections. It is calculated as the difference between the Start time and End time.

Joining the Data Sets

You might notice that the TMC data is binned, while the travel time data is not binned. This was done on purpose, as we want to give you flexibility as to how you combine these datasets. The quickest way to join the datasets is to aggregate the Travel Time data into 15 minute bins. We have provided an example script for how you can do this using Python and the Pandas library.

Additional details

All timestamps are in Coordinated Universal Time (UTC).

You can use the train and test datasets however you wish; however, we recommend if you are doing any machine learning-related project, that you train using the *train* dataset and validate using the *test* dataset.

Depending upon your hack, you might want to consider aggregating the TMC or Travel Time data into bins larger than 15 minutes, aggregating across different movements or directions in the TMC data, or focusing on one or more classes of vehicles in the TMC data.