

Traffic Informatics Using Ubiquitous Networks

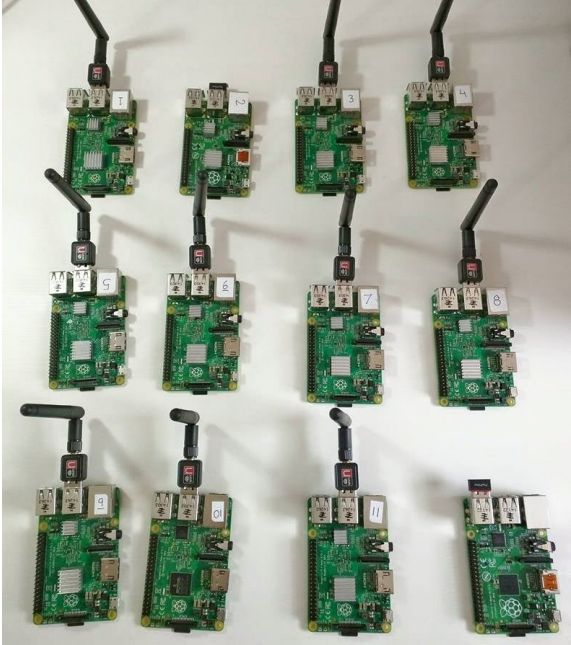
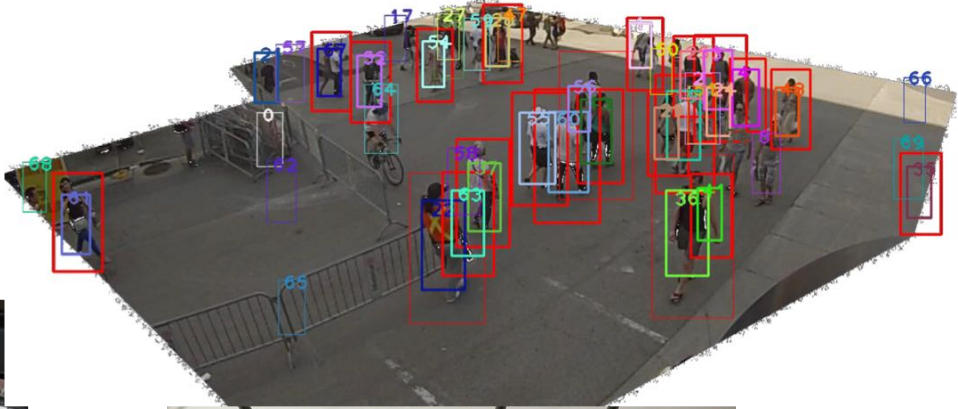
Professor Bilal Farooq

Canada Research Chair Disruptive Transportation Technologies and Services

Laboratory of Innovations in Transportation

Ryerson University

URBANFlux System for Automated Sensing



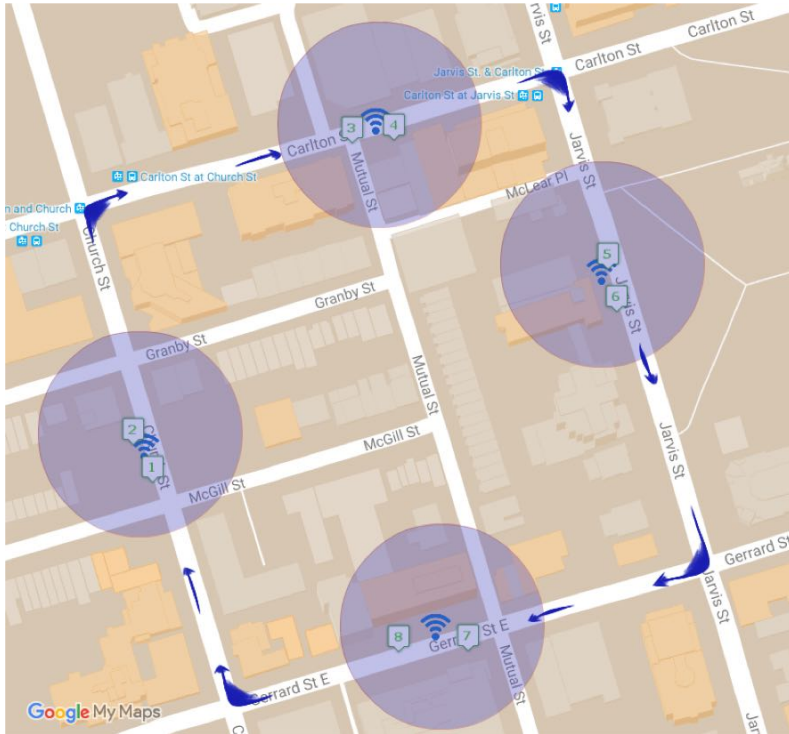
Long-term Deployment



4 Months in Gay Village Montreal



2 Weeks in MURAL Festival Montreal



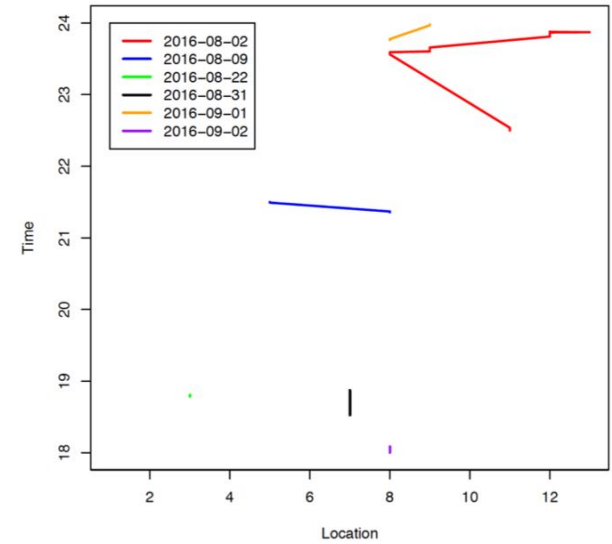
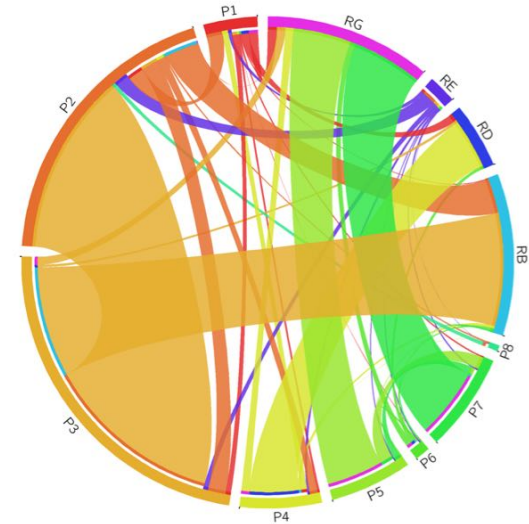
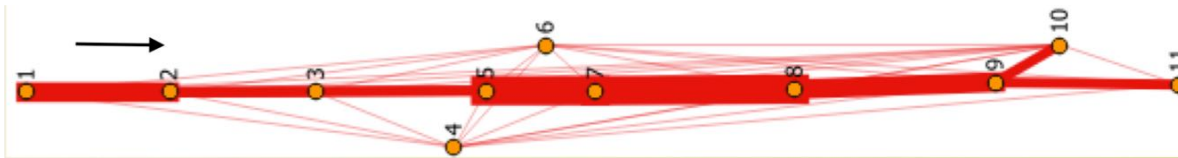
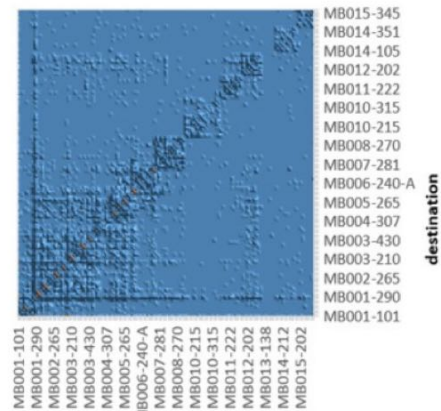
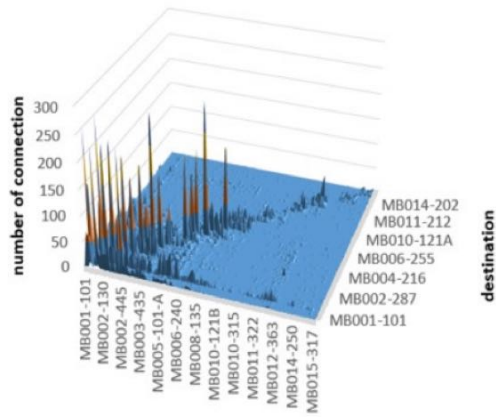
Automated Mode Detection

Algorithm 3: Random Forest algorithm

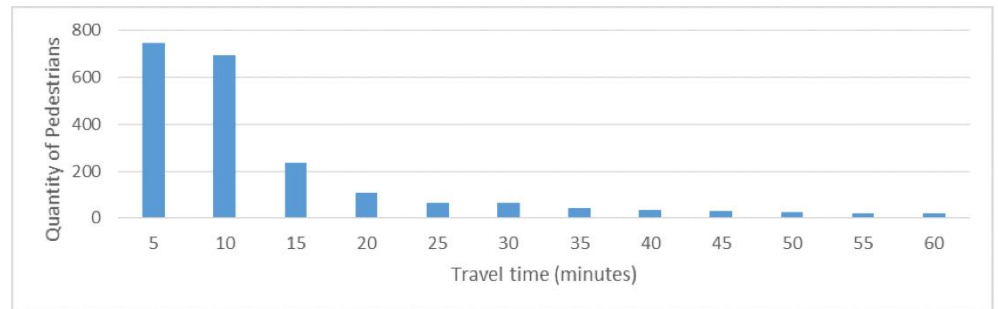
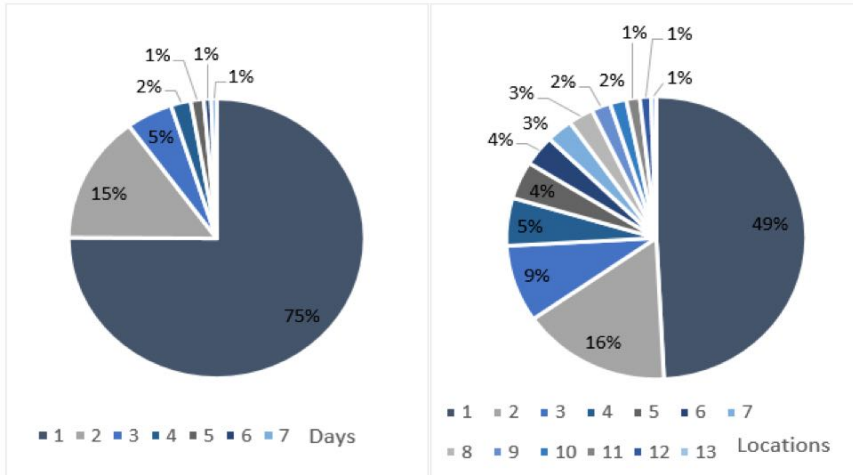
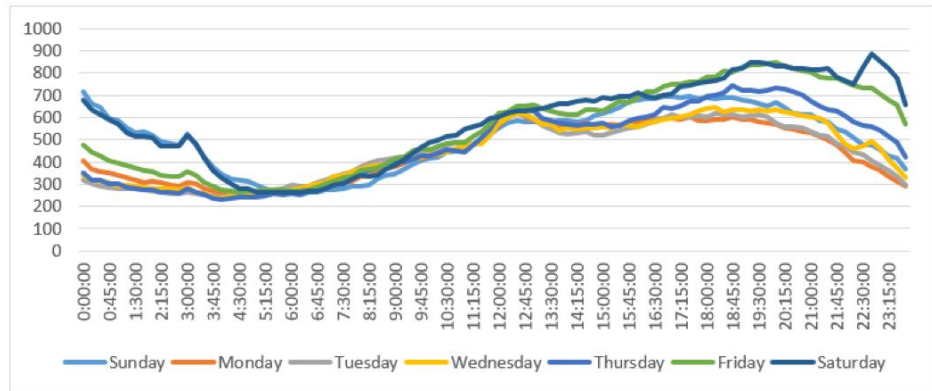
- 1 Set $D = \emptyset$
 - 2 Set number of trees to be trained n_t
 - 3 Set number of features to be used for each tree n_f
 - 4 **for** $i \leftarrow 1$ to n_t **do**
 - 5 *select a random sample R_s with replacement from training set ;*
 - 6 *select n_f random variables from all predictors: R_f ;*
 - 7 *train a Decision Tree D_R based on R_s with features R_f ;*
 - 8 $D = D \cup D_R$;
 - 9 **end**
 - 10 Return D
-

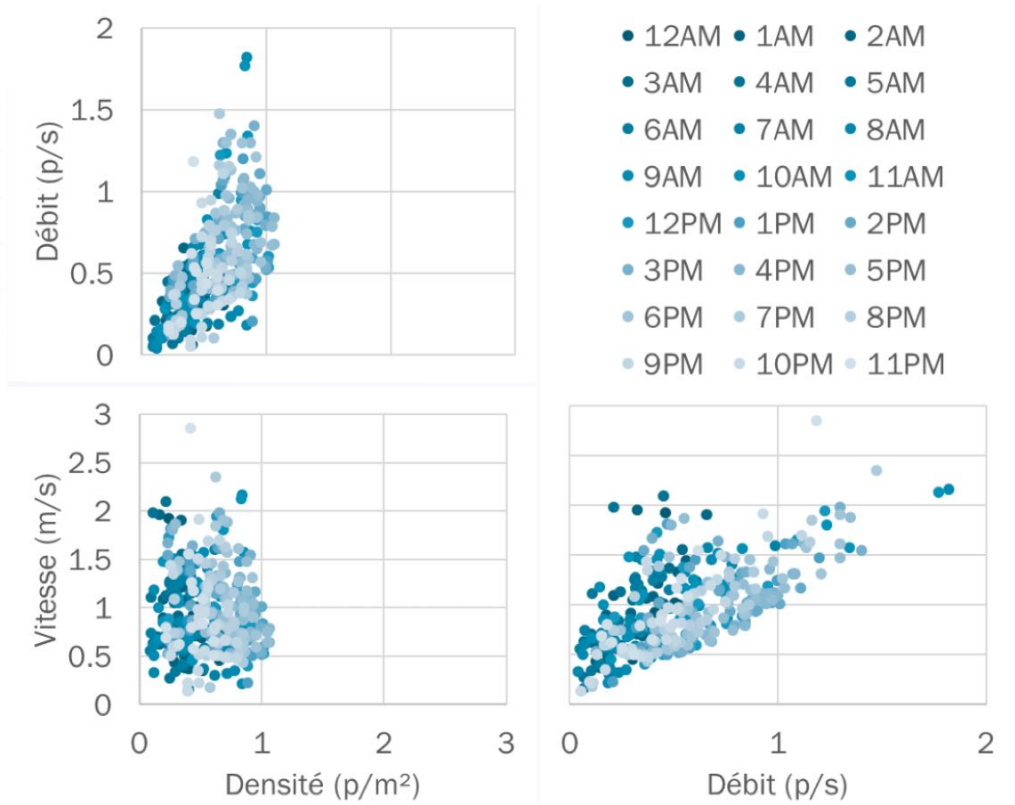
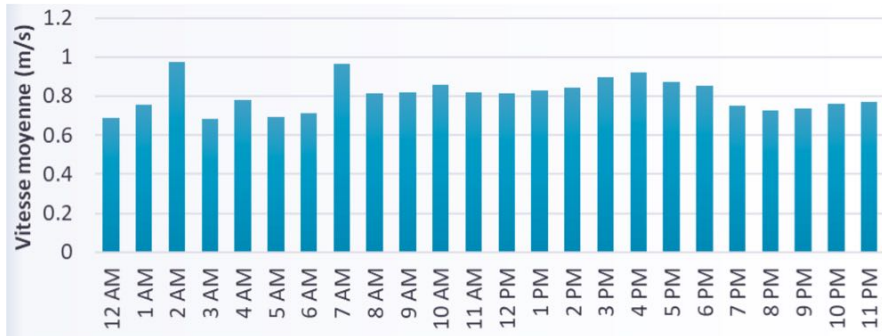
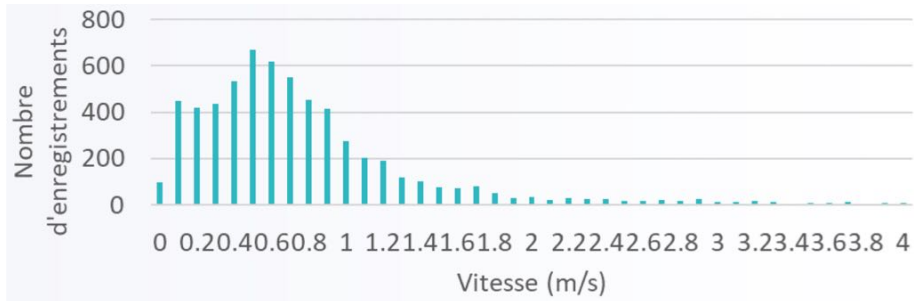
		Prediction			Total	Recall%
		Walking	Biking	Driving		
Actual	Walking	50	4	3	57	87.72
	Biking	3	37	8	48	77.08
	Driving	7	2	46	55	83.64
Total		60	43	57	160	
Precision		83.33	86.05	80.70		

Origin-Destination Flow & Individual Trajectories

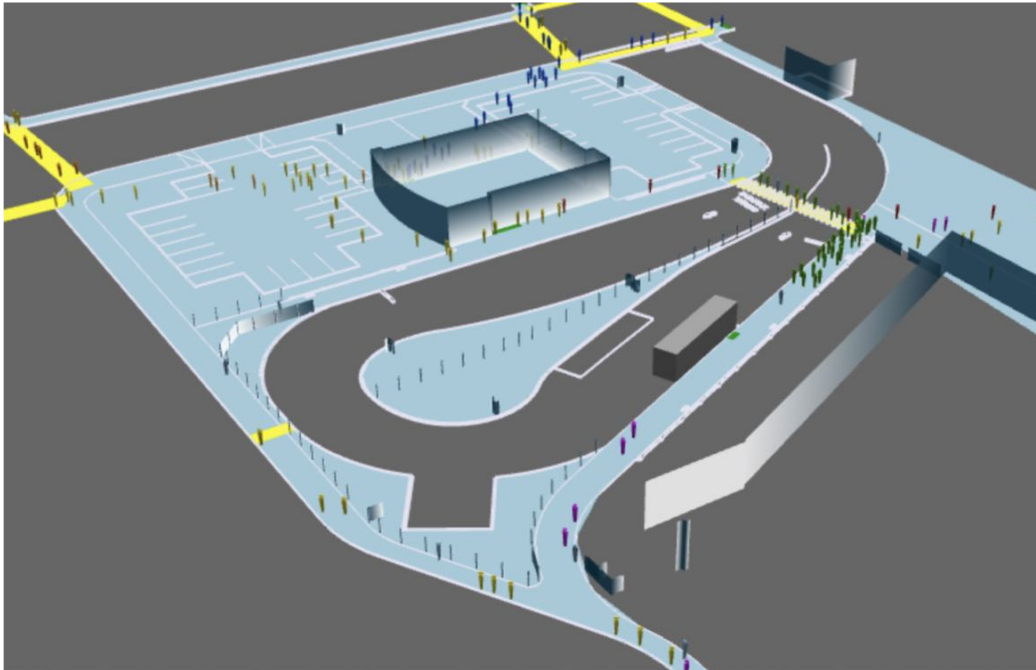


Traffic Flow Characteristics



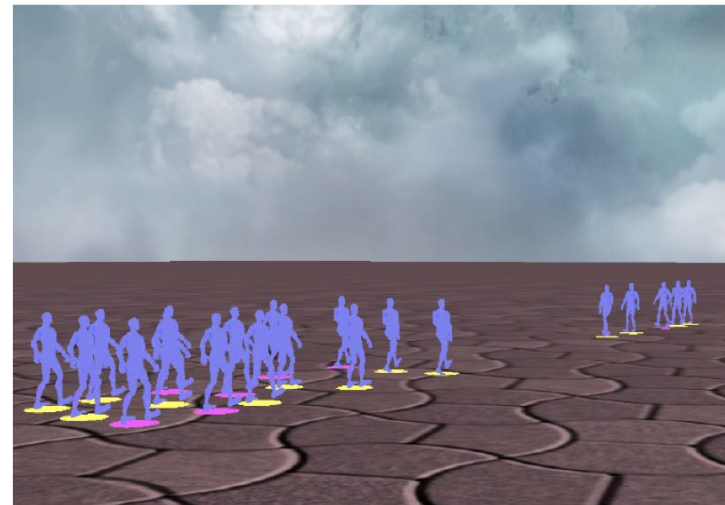
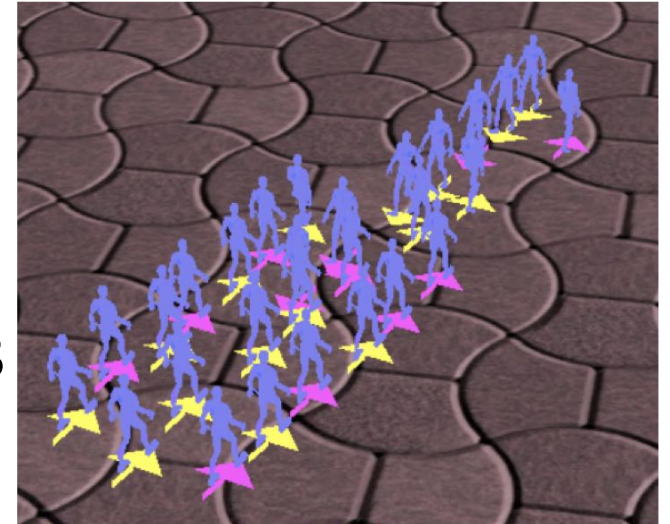


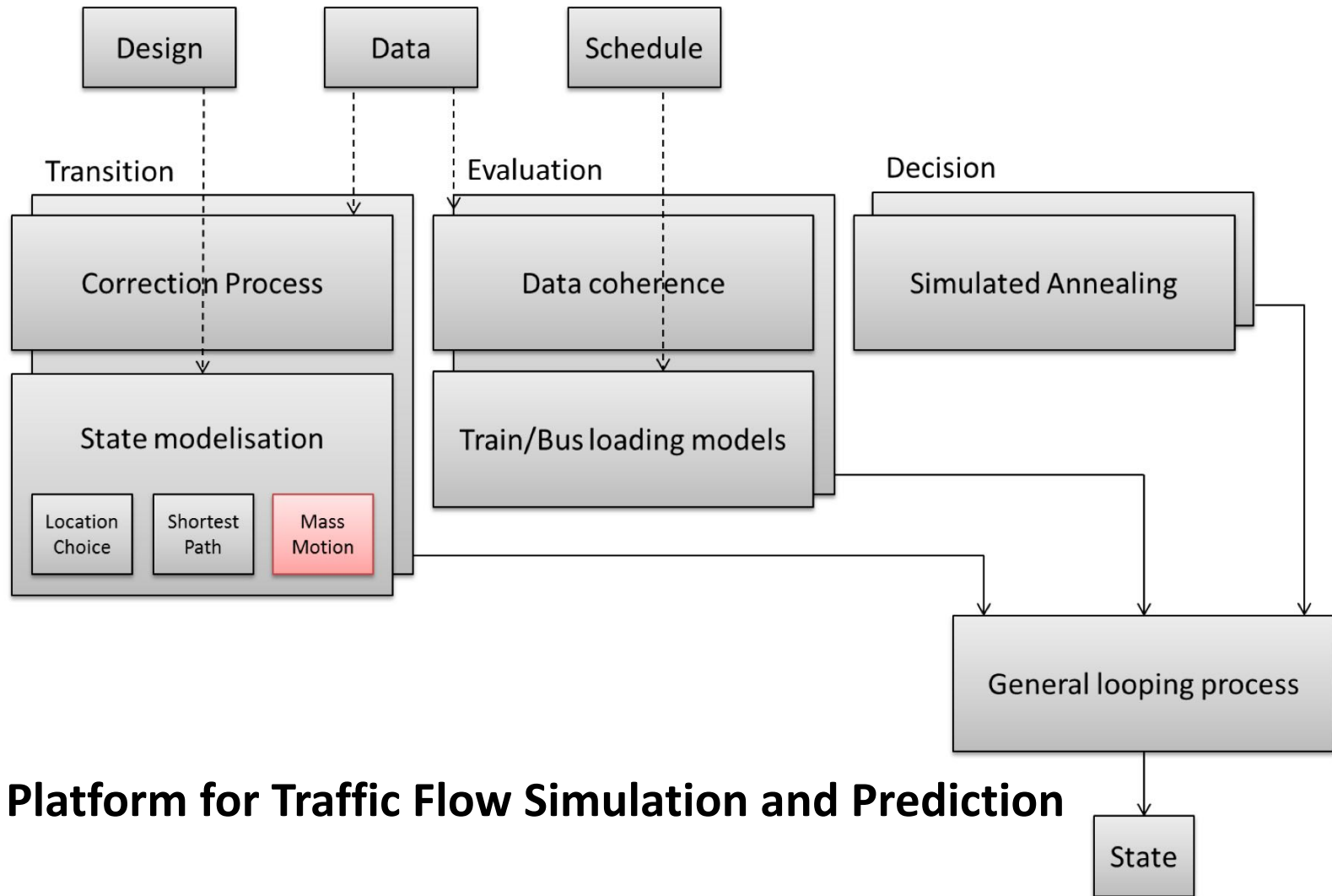
Traffic Flow Characteristics



Traffic Flow Simulation and Prediction

GenESIS





GenESIS Platform for Traffic Flow Simulation and Prediction

Traffic Flow Simulation and Prediction

