Dynamic Modeling:

This is a way of representing mathematically how the things change over the time. In the case of our system everything changes over the time, as a vehicles come and go in different amounts, traffic lights change state, and so on. Using this is very important because it allows us to simulate traffic behavior over time, seeing what happens based on the decisions made.

An example applied to our system is this dynamic model that represents the change of waiting vehicles.

$$x_{t+1} = x_t + \lambda - \beta \cdot s$$

Where:

- x_t: Vehicles waiting in the time t
- λ : Vehicles that have arrived
- β : Vehicles exiting if the traffic light is green
- s : State of the traffic light, if it is green it is equal to 1 and if it is red it is equal to 0