Objective Function

1. Simple version: To minimize traffic oscillation (average accelerations) without sacrificing travel time (reverse of travel distance)

Where is the acceleration of vehicle n at time i,

n belongs to the set of vehicles considered, i.e., if total number of following vehicles considered in the reward , then

i belongs to the set of time window considered, i.e., if time window considered in the reward , then

: the parameter to show the weight of the two parts in the objective function

Transfer to **reward function**:

Penalty will be given if violating (or restriction in controller):

* , where tau, s0 are parameters for safety constraints.
* .
* .

Check if the constraints are broken: if broken use other controller and add high negative reward

Complex version (later)

Change into explicit fuel consumption function, like equation (2) in [Reinforcement Learning based Driving Speed Control for Two Vehicle Scenario].