

## Grid

Dict cars      key=int  
Dict nodes    key=int      Contains Lights  
Dict edges    key=tuple    Contains Roads  
Elements of tuple are start/end points of the edge

## Light (node)

List colors      List of colors (red, yellow, green) for light  
                    Length 2: one color for each direction light faces  
Int timer        Number of time steps between light changes  
Int counter      Current count, between 0 and timer  
Int weight       Preference to be given to light  
                    Used during random path generation for Cars

## Car

Tuple edge        Edge car is located on  
Int lane           Index of lane on current edge  
Float position    Current position on edge  
Float speed        Speed in units/time step  
Float radius       Size of car for collision calculations  
Float accel        Max acceleration in units/time step<sup>2</sup>  
List path           Sequence of node indices to travel to  
Int path\_idx       Current node index on path  
Dict trip\_report   Reports for each edge traveled on  
                    Int time            Time spend on edge  
                    Float avg\_speed      Average speed while on edge  
                    Int time\_stopped    Time spent not moving on edge  
String color       Color of car in visualization

## Road (edge)

Float length       The length of the road in units  
Float maxspeed    Speed limit in units/time step  
Int lanes           Number of lanes in road  
List cars           List of keys into Grid.cars  
                    Represents the cars currently on that edge  
                    Can compute avg\_speed of cars on edge using this  
Int light\_idx       light[colors] index controlling edge flow