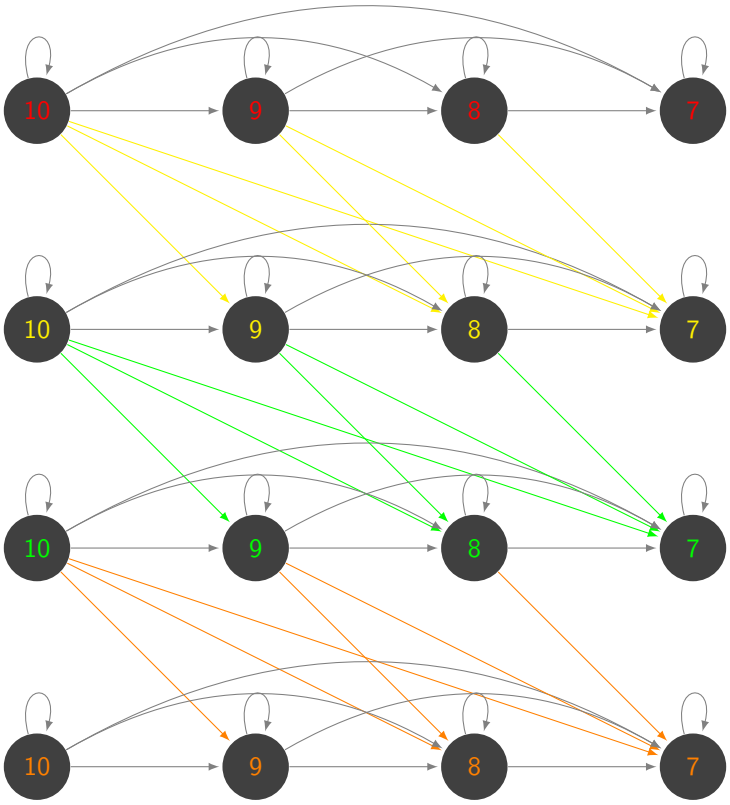
first try to model by a graph

Charles Dufour

March 7, 2018



simply a first idea :

- the state with a number represent how far away the robot is from the traffic light (unit of distance are to be defined as explained later)
- the arrows represents how the robot can go from a state from another :
  1. the robot can stay where he is
  2. he can either go one unit of distance or more (cf later)
  3. the traffic light can change while he is going from one distance to another : let's say it begins in 10 with a red light and goes to 8 if while he was arriving the traffic light changed he will go to the corresponding state [1]

I didn't put arrows between two states 10 of different color since the change in the color of the traffic light follows an exponential distribution and hence at a precise instant the probability of changing color is 0. 1

Now about the distance and velocity units, I was thinking that we could use a discretization[2] of the different velocities we got (I don't know maybe ten or less depends on I don't know what) and then defines a unit of our new distance as how many centimetres the robot did in one second using the lowest speed possible amongst this new set of velocities.

[1] there are arrows from the orange light to the red but I didn't put them in hope it would be more readable. One can uncomment in the Latex code the arrows corresponding

[2] thanks Joachim for this idea