Lecture

Topics:

- Introduction to Statistical Model Checking using Uppaal: Uppaal-SMC

Readings

1. Read through the Uppaal-SMC tutorial.

Can be found on DTU Learn.

Exercise: Pelican Crossing revisited

Refine your solution to the Pelican Crossing exercise of Week 2 so that you can use Uppaal SMC to extract some quantitative properties of the system.

In particular should make stochastic model, where several pedestrians can arrive at the traffic light. You may experiment with difference arrival rates of the different pedestrians at the traffic light. (You may get inspiration from the train-gate example from the Uppaal-SMC distribution.)

Some properties you may analyse are:

1. The average waiting time of (certain) pedestrians in a give period.

2. The probability that the system reach a state where all pedestrians are waiting within a given period.

3. The average number of times a given pedestrian wants to cross the road within a given period.

The channel communication in Uppaal-SMC is restricted to broadcast synchronization. You may have a look at the modelling tricks given in Section 7 of the Uppaal-SMC tutorial, when you make your solution to this exercise.

Furthermore, a solution to the Pelican Crossing exercise with two pedestrians is available on DTU Learn.