## Model Checking (SS 2024) Homework 9

Deadline: May 27, 2025, 9:00am Submit your solution through TeachCenter

## PACMAN:

- Create a network of timed automata
  - o Ghost and Pacman
  - 3x3 grid, starting on opposite ends
  - Make the ghost edges not controllable
  - o Both can stay at most 5 time units on the same field
  - o Leaving a field can be done after a minimum of 2 time units
- Queries:
  - Can Pacman and Ghost be on the same grid?
  - Will they always be on different grids?
  - Can you make a strategy that lets the Pacman always escape? => if so, simulate via concrete simulator
- [Optional] Allow pacman to stay for 50 instead of 5 time units, repeat the queries.
- [Optional] Add a second ghost template (parametrized?)
- Hints: grid as locations or via variables? Either way, having a global variable with the current location makes the query a lot easier.
- You can combine select field and function for guard
- Use the demo folder of UPPAAL to figure out the right syntax of elements ;)

Task 1. [ 50 points] Create the network of timed automata as described above.

Task 2. [ 50 points] Formulate the queries as described above.