KTH — DD2380 Artificial Intelligence

PDDL Assignment (Robot Vet Planning)

This assignment is individual.

Available from: 8 Oct at 17:00

Due: 17 Oct at 19:00

Submission

Submit to Canvas using this mandatory naming convention:

`<LastName>_<FirstName>.pddl` (domain file) in PDDL

Replace <LastName> and <FirstName> accordingly. Your file must load without syntax errors in a standard PDDL solver and contain the correct solution to the problem.

Overview

Encode a planning domain and a problem instance in PDDL for a clinic scenario where a robot veterinarian must give shots to a dog and a cat, then ensure both return to the floor.

Scenario

A robot vet is in charge of giving medicine to a dog and a cat in its clinic. To do so, it first must pick the little animal and put it on the table where the syringe with the medicine is; then, it must pick the syringe and give the shot. The dog is very friendly, so the robot can pick it up whenever it wants. On the other hand, the cat is more diffident, so to pick it up, the robot must ensure it is holding a cat treat, and as soon as the robot picks up the cat, the treat gets eaten. The robot can pick only one animal at a time. The robot can have only one item (syringe or treat) at a time, but it can also pick an animal while holding an item. The task ends when both animals have their shots done and are put on the floor again. **Suggestion**: you can assume there are two treats t1 and t2 on the table that it can pick, so you can use one to pick the cat from the floor and put it on the table, and use one to pick the cat from the table (after the shot) and put it on the floor again.

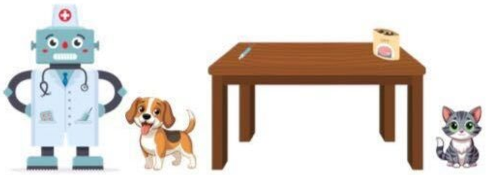

Figure 1: Initial state of the domain.

Defining the Domain

Download the package robotvet.zip from Canvas. Your task is to complete the file robovet_domain.pddl to formalize the planning domain. The syntax used in the file is a standardized syntax used in state-of-the-art PDDL solvers, such as in https://editor.planning.domains. Note that the file robovet_domain.pddl will contain a skeleton definition of the domain.

Your task is to complete the code for each action. All the predicates you are allowed to use are already given in the file. You will therefore not need to define any additional requirements or functions.