Towards a Continous Cleaning Robot

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Abstract. The abstract should briefly summarize the contents of the paper in 150–250 words.

Keywords: First keyword · Second keyword · Another keyword.

1 Introduction

The cleaning robot is a landmark case study in the world of multi-agent systems, allowing us to think about spatiality with a precise and well-defined goal: to remove all dirt. The classic example involves a grid environment of which some cells are dirty, and an agent located on it that must find and clean all the dirty cells knowing only how to take a step in one of the four directions and remove the dirt. With the rapid evolution of game engines, however, the "step-by-step" approach seems to be becoming limiting: we no longer need to think this way; we can abstract more.

In this paper, we propose a cleaning robot that explores space by reasoning about the continuum and leaving the precise management of motion to the environment.

2 Related Work

3 Design and Implementation

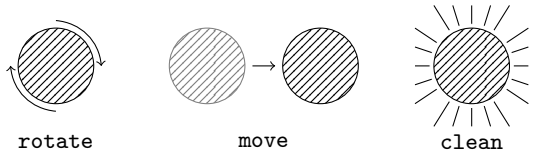
The framework uses JaCaMo for the multi-agent system and Godot for the environment, connected using the WebSocket protocol.

3.1 Robot Actions

The agent is able to perform some simple actions: rotate, move, stop and clean. These actions are implemented as simple plans in the agent body. Here we present the motion action as example.

```
+!move
    :   true
    <-  .print("Moving robot");
        move.
```

In this case the action is to move and the agent calls the `move` artifact method.




```
@OPERATION
public void move(){
    JSONObject json = new JSONObject();
    json.put("type", "move");
    json.put("status", "start");
    send(json);
}
```

3.2 Logic Exploration

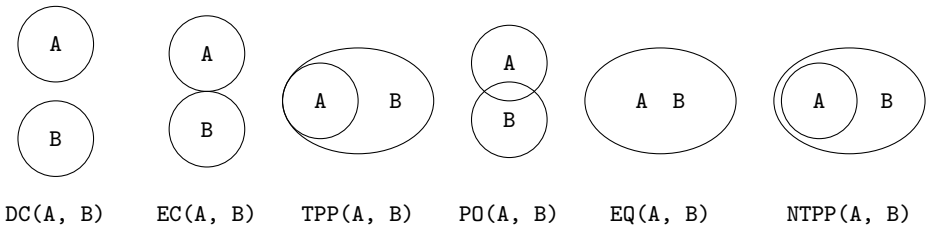


Fig. 1. Relations between regions

4 Results

5 Conclusions

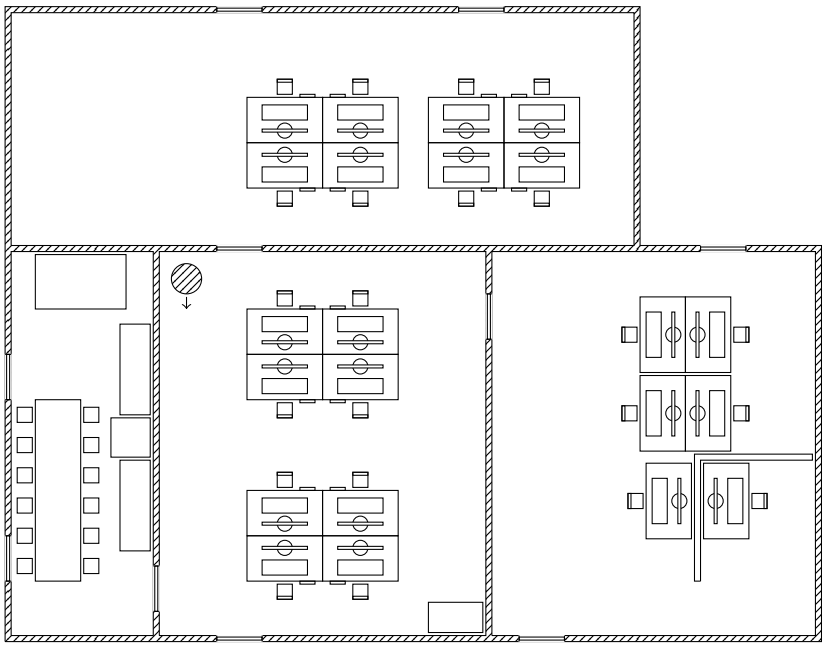


Fig. 2. The test environment