**Virtual Initio Programming: Exercises with BDI Rules**

**AIM:** This exercise sheet provides additional exercises programming with BDI rules.

**Exercise 1**: Write a set of BDI rules that will get your Initio robot to follow the line in **line\_following.xml** world. The robot should move forward if its line sensors are either side of the line and turn left or right, as appropriate, if one of the line sensors detects the line. The agent will need to start on the line to work properly.

**Exercise 2:** Write a set of BDI rules for a wall following agent, that will move forward if the agent detects a wall on its right, turn left if it detects and obstacle to the front and a wall to its right, and turn right if it doesn’t detect a wall to its right. The agent will need to start next to a wall to work properly. The agent should stop if a black surface is detected. You can test this agent in **house.xml** world or **zigzag.xml** world.

**Hint:** You will need to use beliefs about distance (from the ultrasonic sensor) for this and this will be difficult since those beliefs return a number from the belief base dictionary, not true or false, so they can’t be used with agent.B (which only works with beliefs that return true or false). Instead you can define the following function:

def b\_obstacle\_centre():

 if (agent.beliefbase['distance'] < 30):

 return True

 return False

This can be used in conditions and with agent.AND, agent.OR and agent.NOT. For instance:

wall\_in\_front = agent.AND(agent.B('started'), b\_obstacle\_centre)

agent.add\_condition\_rule(wall\_in\_front, left)



 University of Liverpool, 2020

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