Computationele logica

Kamans, Jim   Roosingh, Sander   Schenk, Stefan
10302905   11983957   11881798

December 2017

Exercise 1

A robot is in a war zone. It doesn't know its location, but all it cares is whether or not there is a mine in front (m), and whether or not there is an enemy approaching (e).

1. *Represent the robot's belief-revision structure using a single-agent plausibility model,* with four possible states, using the atomic sentences m for "there is a mine in front of the robot", and e for "an enemy is approaching". Draw arrows going from the less plausible worlds to more plausible worlds (according to the robot's plausibility relation). In your drawing, you may skip the loops (since plausibility relations are assumed to be reflexive) and the arrows that can be obtained by composing other arrows (since plausibility relations are assumed to be transitive), but be aware that they are there. Also, be sure to use all information given in the text above.
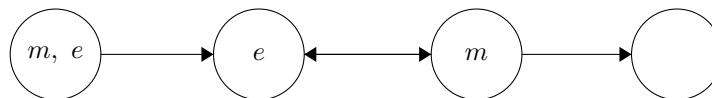
2. *Suppose now that the robot's sensors indicate some vibrations.*

3. *Immediately after the event in the previous part, the robot's metal detector indicates the presence of a mine*

4. *Immediately after the previous two events, the robot receives a message from its controller, saying that: "(Right now, your vibration detector malfunctions, so)* **Whatever you currently believe about the enemy (approaching or not) is false."**

   $\varphi := Be \to \neg e \land B \neg e \to e$

5.

6.

7.

8.

9.

Exercise 2

1.

2.

3.

4.

5.