

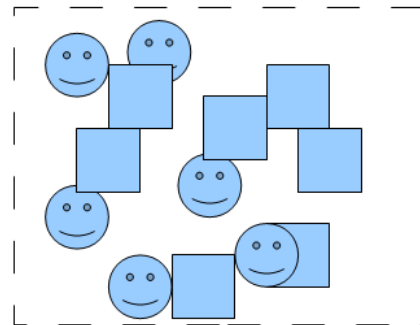
Problems and Exercises

Carrying heavy boxes

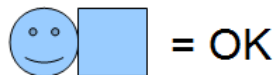
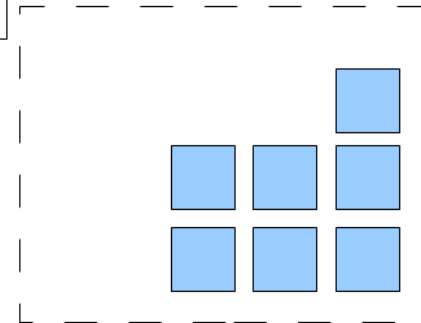
- There are two sort of boxes (light and heavy) lying around in a depot and they need to be carried away. A human can only lift a light box and a heavy box is two times the weight of a light one.
 - (a) How can the problem be solved by cooperation (ok, this one is really easy). Do the humans need to be able to communicate to cooperate ?
 - (b) We now have robots to carry the boxes but with the same limitations as the humans. On top of that, because of expenses, only basic perception means are installed on the robots (they only perceive the boxes, not the other robots) and no communication device is available. Is it still possible to solve the problem ? What simple tweak to the behaviour of the robots would ensure that even the heavy boxes will be carried away given enough time ?

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Carrying heavy boxes

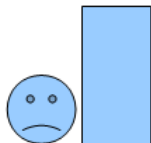


Multi - robot transportation

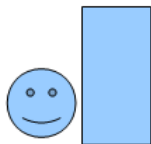


= OK

New
problem :



= too heavy



= OK

Solution 1 : ad hoc (robot engineer)

- new robot !

Solution 2 : explicit (computer engineer)

- sensors
- communication
- negotiation
- ...

Solution 3 : emergent (AI PhD)

- timer