PRINCIPLES OF COGNITIVE ROBOTICS

HOMEWORK ASSIGNMENT 1

ALEXANDER MORIARTY

Question 3:

a) *Intelligence:* The ability to effectively use previously acquired knowledge.
b) *artificial:* A thing which has been reproduced or created by man; not of natural origin.
c) *Intelligence:* Listed twice; see above.
d) *Agent:* A entity which is active (as opposed to passive) in it's environment.
e) *Cognitive Science:* The study of the brain which focuses on the the workings of thought, as opposed to Neuroscience which focuses on the workings of the brain itself, and psychology which focuses on the behaviour of the agent.
f) *Cognitive Robotics:* The field of robotics which focuses on embedding cognitive models and finding from Cognitive Science into robotic agents.

Question 4:

Performance measure VS. *Utility function*:

Performance measure is a measurement based on how well, or accurate a task is performed.

Utility function is based on the end result of performing a task, is the agent *"better off?"*. The values taken into account for usefulness of a result are variables which can be set or learned.

Question 5:

i *Reflex-based:* Actions are chosen purely out of "reflex"; that is, in response to sensor readings.
ii *Model-based:* Actions are chosen based on some pre defined state machine.
iii *Goal-based:* Actions are chosen to achieve a end result.
iv *Utility-based:* Actions are chosen based on maximizing utility, a function which quantifies the end, or current state of the agent.

Question 6:

Braitenberg vehicle: A simple robot from Braitenberg's famous psychology experiment, they are purely reflexive as the sensors are connected directly to actuators. There were three original configurations.

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