

“Artificial Intelligence: A modern approach.”

Abstract and Conceptual Map

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ABSTRACT

TOPIC: Artificial Intelligence: A Modern Approach

AUTHORS: Stuart Russell And Peter Norving

CHAPTER: Agents' program

PAGES: From page 51 to 52 (of the book)

The agent programs described in this book have the same structure: they receive the current perceptions as input from the sensors and return an action to the actuators.

One must note the difference between agent programs, which take the current perception as input, and the agent function, which receives the complete historical perception.

Agent programs receive only the current perception as input because nothing else is available in the environment; if the agent's actions depended on the complete sequence of perceptions, the agent would have to remember the perceptions.

The code repository available at Inter function AGENT-DIRECTED-BY-TABLE(perception) returns an action static variables: perceptions, a sequence, initially empty table, a table of actions, indexed by the perception sequences, initially fully defined append the perception to the end of perceptions action < QUERY(perceptions, table) return action Intuitively, one can see why the table-directed approach to agent construction is doomed to failure.

The exaggeratedly large size of these tables (the number of atoms in the observable universe is less than 1080) means that (a) no physical agent in this universe has enough space to store the table, (b) the designer will not have time to create the table, (c) no agent could learn all the entries in the table from experience, and (d) even if the environment is simple enough to generate a table of reasonable size, the designer has no one to advise him on how to fill in the table.

The key challenge for AI is to find a way to write programs that, as far as possible, reproduce rational behavior from a small amount of code rather than from a table with a large number of entries.

There are plenty of examples showing what can be done successfully in other areas: for example, the large square root tables used by engineers and students before 1970 have been replaced by a five-line program implementing Newton's method on electronic calculators.

The question is, in the case of general intelligent behavior, can AI do what Newton did with square roots?

CONCEPTUAL MAP

