О компьютере и «искусственном интеллекте»

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Предмет: Английский язык.

Класс: 10.

Тема: Наука и техника.

Профиль: Общеобразовательный.

Уровень: Общий.

Текст задачи: Считалось, что скорость внедрения компьютеров в нашу жизнь будет равна скорости их развития и что очень скоро компьютеры будут не только перерабатывать для нас информацию, но заменят нас и в интеллектуальном плане.

Что же мешает учёным создать «искусственный интеллект»? Почему попытки научить компьютер тому, что умеет делать человек, до сих пор терпят фиаско?

а) Выделите ключевые слова для информационного поиска.

б) Найдите и соберите необходимую информацию.

в) Обсудите и проанализируйте собранную информацию.

г) Сделайте выводы.

д) Сравните ваши выводы с выводами известных людей.

Возможные информационные источники

Web-сайты:

http://en.wikipedia.org/wiki/Artificial_intelligence

http://www.cs.unm.edu/~luger/ai-final/tocfull.html.

http://aima.cs.berkeley.edu/

http://www-formal.stanford.edu/jmc/

Культурный образец

http://www-formal.stanford.edu/jmc/human/human.html

<...> It is not surprising that reaching human-level AI has proved to be difficult and progress has been slow--though there has been important progress. The slowness and the demand to exploit what has been discovered has led many to mistakenly redefine AI, sometimes in ways that preclude human-level AI-by relegating to humans parts of the task that human-level computer programs would have to do. In the terminology of this paper, it amounts to settling for a bounded informatic situation instead of the more general common sense informatic situation.

Overcoming the «brittleness» of present AI systems and reaching human-level AI requires programs that deal with the common sense informatic situation-in which the phenomena to be taken into account in achieving a goal are not fixed in advance.

We discuss reaching human-level AI, emphasizing logical AI and especially emphasizing representation problems of information and of reasoning. Ideas for reasoning in the common sense informatic situation include nonmonotonic reasoning, approximate concepts, formalized contexts and introspection.

Many tasks that humans can do, humans cannot yet make computers do. There are two approaches to human-level AI, but each presents difficulties. It isn't a question of deciding

between them, because each should eventually succeed; it is more a race.

If we understood enough about how the human intellect works, we could simulate it. However, we don't have sufficient ability to observe ourselves or others to understand directly how our intellects work. Understanding the human brain well enough to imitate its function therefore requires theoretical and experimental success in psychology and neurophysiology. To the extent that we understand the problems achieving goals in the world presents to intelligence we can write intelligent programs.

What problems does the world present to intelligence? More narrowly, we consider the problems it would present to a human scale robot faced with the problems humans might be inclined to relegate to sufficiently intelligent robots. The physical world of a robot contains middle sized objects about which its sensory apparatus can obtain only partial information quite inadequate to fully determine the effects of its future actions. Its mental world includes its interactions with people and also meta-information about the information it has or can obtain.

Our approach is based on what we call the common sense informatic situation. In order to explain the common sense informatic situation, we contrast it with the bounded informatic situation that characterizes both formal scientific theories and almost all (maybe all) experimental work in AI done so far.

A formal theory in the physical sciences deals with a bounded informatic situation. Scientists decide informally in advance what phenomena to take into account. For example, much celestial mechanics is done within the Newtonian gravitational theory and does not take into account possible additional effects such as outgassing from a comet or electromagnetic forces exerted by the solar wind. If more phenomena are to be considered, a person must make a new theory. Probabilistic and fuzzy uncertainties can still fit into a bounded informatic system; it is only necessary that the set of possibilities (sample space) be bounded.

Most AI formalisms also work only in a bounded informatic situation. What phenomena to take into account is decided by a person before the formal theory is constructed. With such restrictions, much of the reasoning can be monotonic, but such systems cannot reach human level ability. For that, the machine will have to decide for itself what information is relevant. When a bounded informatic system is appropriate, the system must construct or choose a limited context containing a suitable theory whose predicates and functions connect to the machine's inputs and outputs in an appropriate way. The logical tool for this is nonmonotonic reasoning.

Summary

<...> Conclusion: Between us and human-level intelligence lie many problems. They can be summarized as that of succeeding in the common sense informatic situation.

Методический комментарий

Решая эту задачу, учащиеся совершенствуют навыки информационного, поискового и аналитического чтения, активизируют и отрабатывают лексику по теме «Наука и техника. Компьютеры». Учащиеся имеют возможность привлечь и углубить межпредметные знания, групповая работа помогает учащимся аргументированно отстаивать свою точку зрения в процессе поиска информации.