Moravec's paradox

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1 Introduction

Moravec's paradox refers to the observation made by artificial intelligence and robotics researchers that, contrary to popular belief, reasoning requires very little computation while sensorimotor skills necessitate massive computational resources. In the 1980s, Hans Moravec, Rodney Brooks, Marvin Minsky, and others articulated the principle. Moravec wrote in 1988, "it is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, but difficult or impossible to give them the perception and mobility skills of a one-year-old."

2 The biological basis of human skills

Moravec proposes evolution as one possible explanation for the paradox.All human abilities are implemented biologically, with machinery designed by natural selection. Natural selection has tended to preserve design improvements and optimizations over the course of their evolution. Natural selection has had more time to improve the design of a skill as it has aged. Because abstract thought is a relatively new concept, we should not expect it to be particularly efficient in its implementation. According to Moravec- the difficulty of reverse-engineering any human skill should be roughly proportional to the length of time that skill has evolved in animals because the earliest human skills are largely unconscious, they appear to us to be effortless.As a result, we should anticipate that skills that appear effortless will be difficult to reverse-engineer, whereas skills that require effort may not be difficult to engineer at all. Recognizing a face, moving around in space, judging people's motivations, catching a ball, recognising a voice, setting appropriate goals, paying attention to things that are interesting, motor skills, social skills, and so on are some examples of skills that have evolved over millions of years. Recent examples of skills include mathematics, engineering, games, logic, and scientific reasoning. These are difficult for us because they are not what our bodies and brains were designed to do. These are skills and techniques that were recently acquired in historical time and have had only a few thousand years to be refined, primarily through cultural evolution.

3 Historical influence on artificial intelligence

Leading researchers in the early days of artificial intelligence research frequently anticipated that they will be able to develop thinking machines in a few of decades this is because they were successful at writing programs that used logic, solved algebra and geometry problems and played games like checkers and chess. According to Rodney Brooks during the initial stages of developments of AI researchers used to think that intelligence was "best characterized as the things that highly educated male scientists found challenging", such as chess, symbolic integration, proving mathematical theorems and solving complicated word algebra problems. This lead Brooks to pursue a new direction in artificial intelligence and robotics research. He made the decision to create intelligent machines with "no cognition." This new direction, which he termed "Nouvelle AI," had a significant impact on robotics and AI research.