Chapter 12

Artificial Minds and Conscious Machines

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Abstract

The following fundamental issues of artificial minds and conscious machines are considered here: representation and symbolic processing of information with meaning and significance in the human sense; the perception process; a neural cognitive architecture; system reactions and emotions; consciousness in the machine; and artificial minds as a content-level phenomenon. Solutions are proposed for related problems, and a cognitive machine is outlined. An artificial mind within this machine that eventually controls the machine is seen to arise via learning and experience as higher level content is constructed.

Introduction

Could a robot have a conscious mind? We humans are superior to machines and computers because we can think, we can understand, and we are conscious. We humans perform actions that are meaningful to us, ourselves. The actions of
present-day machines may be meaningful to us but not to the machine, because we have a mind, while the machine has not. Therefore, to create higher machine cognition, we should investigate the possibilities of true thinking and conscious machines, ones with artificial minds. These machine minds should imitate the human mind in all its expressions and ways of operation in order to achieve human-level mental performance.

The human mind is characterized by the flow of inner imagery, inner speech, sensations, emotional moods, and the awareness of these. The human mind is imaginative, creative, and intelligent. The human mind possesses intentionality; it operates with meanings and significance, and it understands what it is doing. The human mind seems to effortlessly unify past experience; present multisensory information; the expected and desired future; needs, drives, and goals; as well as any triggered emotional states. Our minds have contents that make us what we are—our personal history, fortunes and misfortunes, needs, values, secret desires, yearnings and hopes, and our ways of perceiving and acting upon the world. Mind and consciousness go together. Consciousness provides us the instantaneous focus of awareness and the ability to report our mental content to ourselves and others. The creation of conscious machines is the ultimate challenge of artificial intelligence (AI).

Background

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