

A Synergy of Morphology, Action, Perception and Learning for Embodied Intelligence

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Abstract

Embodied intelligence emphasizes that the intelligence is affected by the tight coupling of brain, body, and environment. It is continuously and dynamically generated through the process of information perception and physical interaction with the environment. During the past years, the research scope of embodied intelligence has also been expanding and has attracted great attention from various communities. At the same time, a huge number of works relevant to embodied intelligence have been proposed, especially in recent years. In this article, we present a comprehensive survey of embodied intelligence from the perspective that it is a synergy of morphology, action, perception, and learning, providing a thorough summary and categorization of existing studies. Specifically, as embodied intelligence is a synergy of all these components rather than themselves alone, we mainly focus on the connections across these four components (morphology, action, perception, and learning) and identify areas where future research can benefit from their intrinsic connections.



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