

EcoBot-II: An artificial agent with a natural metabolism

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Abstract

In this paper we report the development of the robot EcoBot-II, which exhibits a primitive form of artificial symbiosis. Microbial Fuel Cells (MFCs) were used as the onboard energy supply, which consisted of bacterial cultures from sewage sludge and employed oxygen from free air for oxidation at the cathode. EcoBot-II was able to perform sensing, information processing, communication and actuation when fed (amongst other substrates) with flies. This is the first robot in the world, to utilise unrefined substrate, oxygen from free air and exhibit four different types of behaviour. The work presented in this paper focuses on the fly insects (substrate) and the open O₂ cathode to power EcoBot-II.