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PREFACE

ARTICLES

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SESSIONS

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## Study of Skinner Automaton Implemented on a Two-Wheeled Robot

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operant conditioning; learning automaton; two-wheeled robot

### Abstract

Learning is the main aim of robotics. In this paper we present a new stochastic learning automaton called a Skinner automaton as a psychological model for formalizing the theory of operant conditioning. We identify animal operant learning with a thermodynamic process, and derive a so-called Skinner algorithm from Monte Carlo method and Metropolis algorithm and simulated annealing. The Skinner automaton is implemented on a two-wheeled robot with a flexible lumbar in a simulation experiment and it learns to keep balance successfully.

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