

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Flexible Strategy Use in ACT-R's Tic-Tac-Toe

Permalink

<https://escholarship.org/uc/item/6m0782qq>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

Authors

Skirzyski, Julian

Wasilewski, Piotr

Publication Date

2019

Peer reviewed

Flexible Strategy Use in ACT-R's Tic-Tac-Toe

Julian Skirzyski

McGill University, Montreal, Quebec, Canada

Dr Piotr Wasilewski

University of Warsaw, Warsaw, Poland

Abstract

Modeling cognitive processes is one of the major tasks of cognitive science. This work presents a computer model of a study described in "Flexible Strategy Use in Young Children's Tic-Tac-Toe" (Crowley & Siegler, 1993) in which authors made an attempt to characterize decision-making in a conflict-of-interests-like environment. In the experiments, kindergarten/primary school children and an algorithm-based opponent played a series of games in Tic-Tac-Toe. The outcomes seemed to indicate existence of a hierarchy of rules that is constructed with experience. Although already tested algorithmically, the simulation detailed in the paper was applicable to a narrow class of problems only. The model shown in this work was built using a cognitive architecture, i.e. computer-based structure mimicking general functioning of the human mind. We used a rule-based system ACT-R that operates in mental rules paradigm and successfully replicated results of the mentioned study.