

"Autonomously Acquiring 'Human-like Behaviors' of Agents with Biological Constraints - A Case Study of Constructing Computer Mario Player"

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(invited speaker)

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Abstract. Rencon "Musical Performance REnDerIng CONtest" is a competition that pits different computer systems against each other in a battle of musical expression. In Rencon, entrant systems are divided into different categories; the automatic category and the semi-automatic (interactive) category, in accordance with to what extent the human operator should touch the system to generate performances. Most of the recent systems into the automatic category are based on case-based or machine learning approach. Both approaches require a "database" of music performances. This means the results of the performance are much influenced by the operator's data selection. Strictly speaking, there is no truly automatic musical performance systems at present.

We have a long way to go to this profound goal to realize a true automatic musical performance system. But I believe reinforcement learning to acquire behaviors that human-beings regard as "natural" with some plausible constraints can give a hint to think of the true "autonomous".

In my talk, I'm going to introduce an attempt to acquire human-like behaviors of a video-game agents with reinforcement learning where biological constraints are introduced.