

Competing with oneself: Introducing self-interaction in a model of competitive learning

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A competitive learning model was introduced in Ref. 1 (A. Mehta and J. M. Luck, Phys. Rev. E 60, 5, 1999), in which the learning is outcome-related. Every individual chooses between a pair of existing strategies or types, guided by a combination of two factors: tendency to conform to the local majority, and a preference for the type with higher perceived success among its neighbors, based on their relative outcomes. Here, an extension of the interfacial model of Ref. 1 is proposed, in which individuals additionally take into account their own outcomes in arriving at their outcome-based choices. Three possible update rules for handling bulk sites are considered. The corresponding phase diagrams, obtained at coexistence, show systematic departures from the original interfacial model. Possible relationships of these variants with the cooperative model of Ref. 1 are also touched upon.

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