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On learning to coordinate: random bits help, insightful normal forms, and competency isomorphisms. (English) [Zbl 1094.68039](#)
J. Comput. Syst. Sci. 71, No. 3, 308-332 (2005).

Summary: A mere bounded number of random bits judiciously employed by a probabilistically correct algorithmic coordinator is shown to increase the power of learning to coordinate compared to deterministic algorithmic coordinators. Furthermore, these probabilistic algorithmic coordinators are provably not characterized in power by teams of deterministic ones.

An insightful, enumeration technique based, normal form characterization of the classes that are learnable by total computable coordinators is given. These normal forms are for insight only since it is shown that the complexity of the normal form of a total computable coordinator can be infeasible compared to the original coordinator.

Montagna and Osherson showed that the competence class of a total coordinator cannot be strictly improved by another total coordinator. It is shown in the present paper that the competencies of any two total coordinators are the same modulo isomorphism. Furthermore, a completely effective, index set version of this competency isomorphism result is given, where all the coordinators are total computable. We also investigate the competence classes of total coordinators from the points of view of topology and descriptive set theory.

MSC:

[68Q32](#) Computational learning theory

Cited in **2** Documents

Keywords:

[coordination](#); [learning](#); [probabilistic machines](#)

Full Text: [DOI](#)

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