

Searching games with lies

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We consider the problem of searching with errors in the framework of two-person games. The Responder (Pinocchio) thinks of an object in the search space, and the Questioner has to find it by asking questions to which Pinocchio provides answers, some of which are erroneous.

As pointed out by Daniele Mundici, searching games with lies are closely related to multi-valued logic.

We give a taxonomy of such games, depending on the type of questions allowed, on the degree of interactivity between the players, and on the imposed limitations on errors.

We survey the existing results concerning such games, concentrating on the issue of optimizing the Questioner's querying strategy, and pointing out open problems. We show the relations between searching games with errors and error-correcting codes. Finally, we discuss other search and computation problems with faulty feedback, which are related to searching with errors.