

1106-92-924

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(Dashiell.Fryer@pomona.edu). *A Powerful Long Memory Strategy for the Prisoner's Dilemma.*

We present a long-history strategy capable of quickly inferring opponent strategies and building coalitions in population games using statistical inference and machine learning techniques. Players using this strategy very effectively invade populations of existing strategies including tit-for-tat, win-stay-lose-shift, and zero determinant strategies, and conversely block invasion by these strategies, even in the presence of substantial ambient noise (errors in play). Many computationally intense simulations yield high-confidence fixation probabilities (analytic results are not easily attainable). This shows that longer memory strategies can be of great utility in population games. (Received September 08, 2014)