Individual vs. Group Success in Social Networks

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Abstract

There are many times when individuals work independently to find a solution to a problem but share information about their progress along the way, such as companies innovating on the latest product, scientists searching for a cure to a disease, or inventors competing for an "X-prize". In these situations, when individuals are collectively searching for a solution to a problem, the flow of information between them can affect both how quickly the group finds the solution and who benefits the most.

To study this situation, we had participants recruited from Amazon's Mechanical Turk play a game in which they were searching a hidden payoff function resembling a rugged landscape with a single global optimum, and were paid based on the points they earned. They could also see where three other players had explored and how much they earned, and were able to exactly copy these players' choices and rewards. Unknown to the participants, they were connected to each other in one of several pre-defined networks. For this type of problem we find decentralized networks are most beneficial for the group, although the best-performing position in a hierarchy does roughly as well as the average member in a decentralized network. Additionally, we find a social dilemma emerges, where it is individually advantageous to exploit previously found solutions, but better for the group if individuals explore.

Biography

Winter Mason received a B.S. in Psychology from University of PIttsburgh in 1999 and a Ph.D. in Cognitive Science and Social Psychology from Indiana University in 2007. For the past 3 years he has worked as a post-doctoral fellow at Yahoo! Research in the Human Social Dynamics group.