**Optimizing success of random searches in various search environments** FARNAZ GOLNARAGHI, AJAY GOPINATHAN, Univ of California - Merced — Many animals such as the albatross, gray seal, and deer are known to exhibit foraging patterns where the distances they travel in a given direction are drawn from a particular heavy tailed distribution (a power law) known as a Levy distribution. Previous studies have shown that, under conditions of sparse resources, this search process is optimized with respect to the efficiency, defined as the ratio of total number of targets found to the total distance travelled, when the power-law has an exponent equal to 2. Although single agent Levy search processes have been studied well in the literature, little is known about multi-agent search processes. In many natural settings, there are typically multiple foragers who can interact with each other in different ways including either cooperating or competing with each other. We develop a stochastic agent-based simulation to study the effect of the number of agents, and various types of interactions between them on the search efficiency, and present our results for the optimum search strategy for cases in which foragers try to avoid encountering each other in different ways.

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