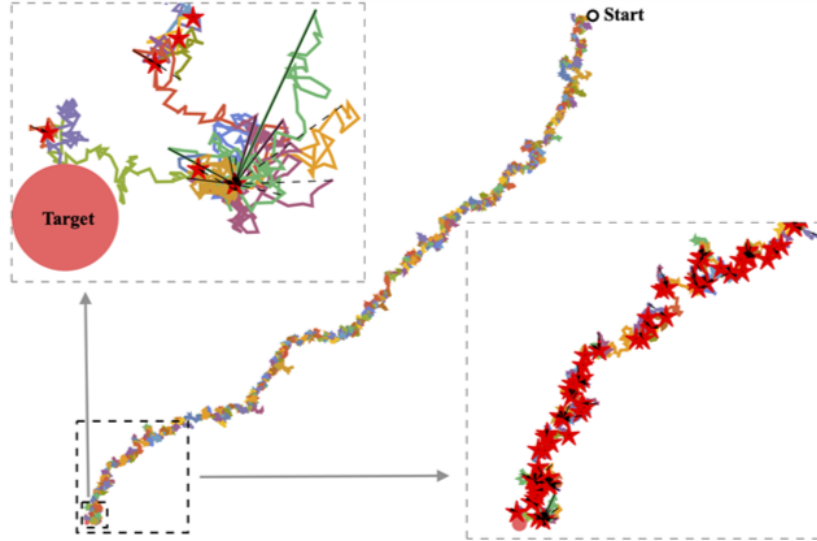


Proxitaxis: An adaptive search strategy based on proximity and stochastic resetting

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We introduce proxitaxis, a simple search strategy where the searcher has only information about the distance from the target but not the direction. The strategy consists of three crucial components: (i) local adaptive moves with a distance-dependent diffusion coefficient, (ii) intermittent long-range returns via stochastic resetting to a certain location R_0 (vector), and (iii) an inspection move where the searcher dynamically updates the resetting position R_0 (vector). We analytically compute the capture probability of the target within this



strategy and show that it can be maximized by an optimal choice of the control parameters of this strategy. Moreover, the optimal strategy undergoes multiple phase transitions as a function of the control parameters. These phase transitions are generic and occur in all dimensions.

