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Roach infestation optimization

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There are many function optimization algorithms based on the collective behavior of natural systems — Particle Swarm Optimization (PSO) and Ant Colony Optimization (ACO) are two of the most popular. This poster presents a new adaptation of the PSO algorithm, entitled Roach Infestation Optimization (RIO), which is inspired by recent discoveries in the social behavior of cockroaches. We present the development of the simple behaviors of the individual agents, which emulate some of the discovered cockroach social behaviors. We also describe a "hungry" version of the PSO and RIO, which we aptly call Hungry PSO and Hungry RIO. Comparisons with standard PSO show that Hungry PSO, RIO, and Hungry RIO are all more effective at finding the global optima of a suite of test functions.