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Introduction to Swarm Intelligence

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What are the elements of Swarm intelligence?

A solution (or at least something proximal), a population of at least 2 individuals (independent or partially independent) and the social interaction to attempt to get a solution.

What is Self-Organization?

Local rules, the individuals follow those rules and that is called an organized behavior, then, population is said to be self-organized.

Provide an example where Swarm Intelligence can be useful

Finding a path to get out from a labyrinth.

Provide an example where Swarm Intelligence cannot be useful

Simulating a population where every individual is aggressive and eats each other.

Why is learning important in Swarm Intelligence?

Because if they forget they would not get better at the solution, learning means (or should mean) with every try they are getting closer to the optimal solution.

Why is signaling important in Swarm Intelligence?

Because communication becomes easier between individuals, for example, explorer ants could have some signals for communicating there is a danger nearby.

List the conditions required for Swarm Intelligence to perform well

Individuals should have the same target (or at least more or less the same target).

Population should be diverse, but not too much.

Individuals really cannot get the optimal answer by themselves, and should act by implicit (or explicit) rules made by the population.