

D S DONKEY AND SMUGGLER O OPTIMIZATION

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SUMMARY

- What is the DSO algorithm?
- How does DSO algorithm work?
- Applications on DSO algorithm?
- Example of DSO algorithm.



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DSO algorithm: is a metaheuristic algorithm inspired by the movement and route selection behaviors of donkeys to find near-optimal solutions efficiently.

Some other algorithms might miss the best solution if it disappears during the search process

DSO algorithm address this issue by having two modes:

- Smuggler mode: finds the globally best solution.
- Donkey mode: maintains it or returns to it if it's lost.

The advantages of DSO over other algorithms its efficiency and ability to avoid getting stuck in local optima.

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(DSO) ALGORITHM WORKING PROCESS

DONKEY MOOD:

The algorithm creates a bunch of virtual "donkeys" that explore the problem space. They try different solutions, some are successful others are leading to bad options.

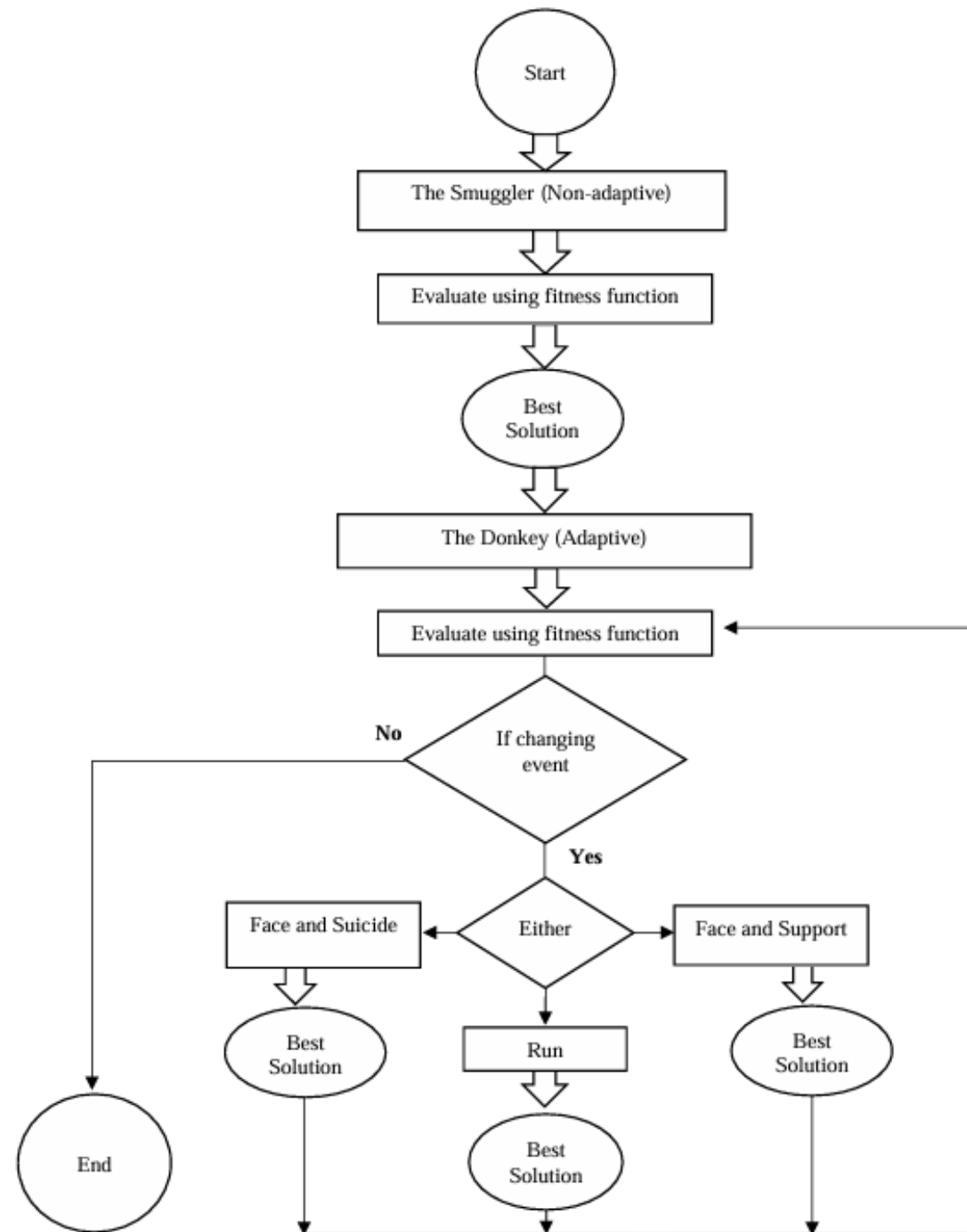
the behaviors of donkeys can be concluded in the following points:

- 1.Run (Change path).
- 2.Face and support.
- 3.Face and suicide.

SMUGGLER MOOD:

Once the donkeys have explored enough, the algorithm analyzes all the paths they discovered. Then identifies the most efficient solution, like the shortest route or the one that minimizes a cost factor.

FLOWCHART



APPLICATIONS ON (DSO) ALGORITHM:

- Traveling salesman problem (finding the shortest route to visit all cities).
- Packet routing in networks.
- Optimizing ambulance dispatch routes.

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EXAMPLE

Imagine a group of donkeys: exploring their surroundings, searching for the best path (like donkeys finding good grazing areas).

Sometimes they get stuck (hit dead ends) or find helpful paths (discover good shortcuts) or might even help each other out (share their discoveries).

Now imagine some clever smugglers: taking all the information gathered by the donkeys (the explored paths). Then analyze all the options and find the most efficient route (the shortest path that avoids dead ends).

This two-pronged approach allows DSO to efficiently search for good solutions to complex problems.



THANK YOU