An Enhanced Golden Jackal Optimization Algorithm

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Background:
- Meta-heuristic optimization techniques have the advantages of simplicity, flexibility, derivation-free mechanism, etc., and have been widely used to solve various engineering optimization problems.
- The Golden Jackal Optimization (GJO) algorithm is a new population-based meta-heuristic optimization algorithm inspired by the collaborative hunting behavior of the golden jackal.
- GJO achieves acceptable optimization performance with few parameters and simple rules. However, like most well-known heuristic algorithms, GJO also has limitations in global exploration and is prone to getting stuck in local optimum.

Enhanced Methods:
An enhanced GJO (EGJO) with environmental disturbance strategy and an improved parameter of evading energy of prey is proposed.
1. The switching mechanism modified with an environmental disturbance strategy.
2. Modification of the parameter of evading energy of prey.
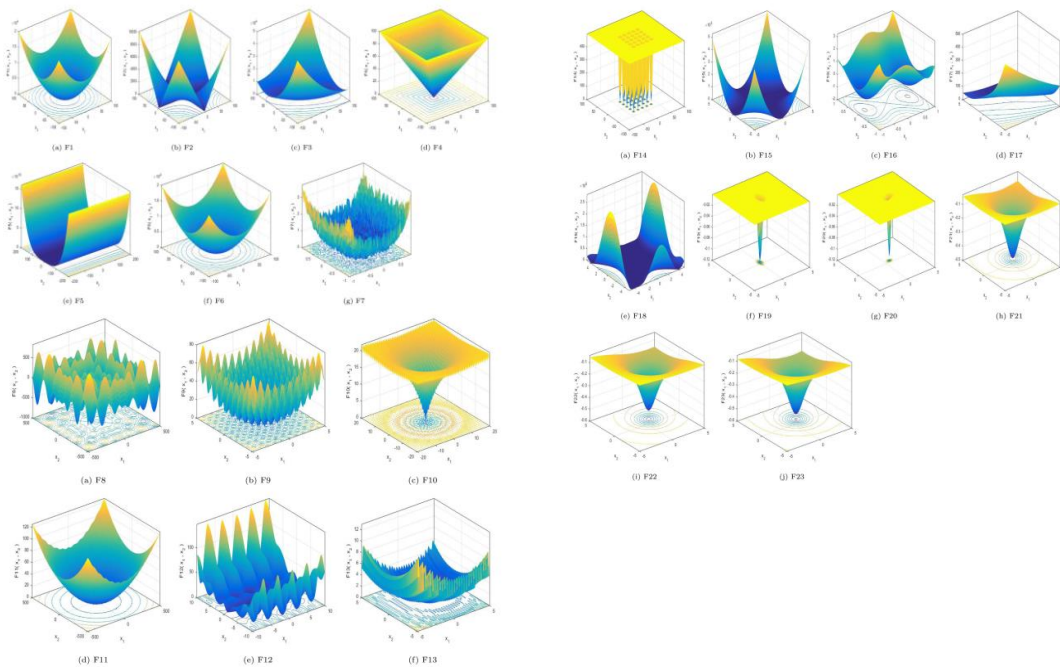
Inspiration and Search Strategies of GJO

A) Pair of Golden Jackal B) Golden Jackal searching for prey C) Stalking and enclosing of prey D) &E) Pouncing on prey.
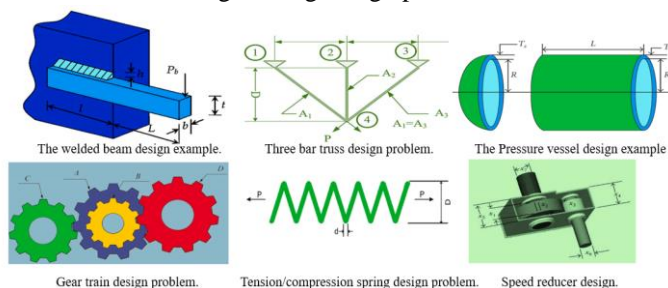
if E < 1 (a)   if E > 1 (b)
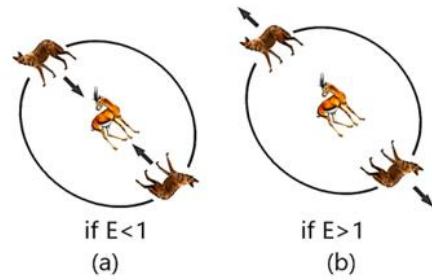
Attacking vs searching for prey.

Evaluation Methods
1. 23 classical benchmark functions

2. Six real-word engineering design problems

The welded beam design example.   Three bar truss design problem.   The Pressure vessel design example

Gear train design problem.   Tension/compression spring design problem.   Speed reducer design.

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