

★ Corrected Artificial Bee Colony Optimization :-

Algorithm :-

- i) Generate the initial population randomly.
- ii) For each employed bee x_i Do:
 - iii) Calculate fitness $F(x_i)$
 - iv) Obtain new candidate solution V_i in the neighborhood using:
$$V_{i,k} = x_{i,k} + \Phi_{i,k} (x_{i,k} - x_{j,k}) \text{ where } i \neq j$$

$$\Phi_{i,k} \text{ rand} [-1, 1]$$
 - v) Apply greedy search to compare $F(x_i)$ with $F(V_i)$ and update if better
- vi) Employed bees pass on information ^{to onlooker bees} on their best food source (solution) through waggles dances which depict information on not only the location of the nectar, but also its quality.
- vii) Onlooker bees evaluate the info from the employed bees and choose a food source based on a probabilistic selection given by,

$$P_i = \frac{f(x_i)}{\sum f(x_i)}$$

- viii) If a particular food position cannot be improved over a predefined number of cycles (limit), the food source is abandoned and the scout bees discover new food sources using:
$$x_{i,k} = lb_k + \Phi_{i,k} (ub_k - lb_k) \text{ where } lb \rightarrow \text{lower bound}$$

$$ub \rightarrow \text{upper bound of } k^{\text{th}} \text{ dimension}$$

$$\Phi_{i,k} = \text{rand}(0, 1)$$