Pseudo for Ant Image Algorithm

Read the information from an image and store it in a 2D Array;

Place the Ants at random locations on the image

Each time an ant is placed, check to make sure there are no ants stacked;

Check the location of each ant for food

Check if location has food or not

If no food

Mark location as explored and set that ant’s movement type to look for new coordinate, food;

If there is food

Mark the location as explored;

Record the coordinates of the food;

Release Pheromone to surrounding area;

Set that ant’s movement type to look for first direction off of coordinate;

Move each ant “n” number of ticks

At the beginning of each tick, reduce pheromone levels across the image;

For each ant, check the type of movement they can make;

If new movement searching for new coordinate;

Sense the four movement directional options for that ant;

For each of the four options search each spot for the best move;

If location has Food, Pheromone, Unexplored then move here and establish the new direction the ant is facing.

Else If location has Food, Multiple Pheromone trails, Unexplored then move here and establish the new direction the ant is facing.

Else If location has Food, Less Ants in the area, Unexplored then move here and establish the new direction the ant is facing.

Else If location has Food, Unexplored then move here and establish the new direction the ant is facing.

Else the Ant choses one of the four directions randomly and move there, and establishes the direction that it is facing.

If first movement off of a new coordinate;

Same movement as an ant searching for a new coordinate, differ in the information is recorded.

If relative movement;

Check for the direction the ant is facing to determine forward location;

Sense the five relative movement directional options for that ant based on the direction the ant is facing;

First check if the forward location is a suitable option for a move;

If Food, Pheromone, Unexplored, Same Direction as last move then move here and establish the new direction the ant is facing;

Else If Food, Multiple Pheromone Trails, Unexplored, Same Direction as last move then move here and establish the new direction the ant is facing;

Else If Food, Less Ants in the area, Unexplored, Same Direction as last move then move here and establish the new direction the ant is facing;

Else If Food, Unexplored, Same Direction as last move then move here and establish the new direction the ant is facing;

Else check the other directions for suitable move option;

If location has Food, Pheromone, Unexplored then move here and establish the new direction the ant is facing;

Else If location has Food, Multiple Pheromone trails, Unexplored then move here and establish the new direction the ant is facing;

Else If location has Food, Less Ants in the area, Unexplored then move here and establish the new direction the ant is facing;

Else If location has Food, Unexplored then move here and establish the new direction the ant is facing;

Else If no desirable movements, move randomly to one of the 5 possible locations then establish the new direction the ant is facing;

After each ant moves, check that ant’s new location for food;

Check if there is food or not;

If there is no food;

Mark as explored;

Set that ant’s movement type to look for “new” coordinate or food bit;

If there is food at the location;

Check if it has already had that location recorded;

If it has been explored, set that ant’s movement type to look for “new” coordinate or food bit;

If not explored yet;

Mark as explored;

Check the type of movement that ant made;

If it made a “new” move searching for a coordinate;

Record the coordinate of that food bit, release the pheromone to surrounding areas, set the movement type of that ant to look for “first” direction off of the coordinate;

Else If it was making it’s “first” move off a coordinate;

Record the direction that ant traveled, release pheromone to the surrounding areas, set that ant’s movement type to “relative” movement;

Else if it was making a “relative” movement;

Record the relative direction that the ant traveled, release pheromone to the surrounding areas, set that ant’s movement type to “relative” movement;

If N = the number of ticks;

Recreate the image using the records of each ant that were collected by the ants;