Key Differences

Reference for Decision-Making:

Mode 0 uses a local reference — the current visitation density at a particle's location.

Mode 1 uses a global historical reference — the average of all past positions of the swarm.

Exploration Strategy:

Mode 0 focuses on immediate exploration by responding to current environmental conditions (i.e., current pheromone levels).

Mode 1 emphasizes strategic exploration based on cumulative historical data, promoting a deviation from traditionally popular paths.

Scalability and Memory:

Mode 0 may require less memory as it only needs to update and refer to the memGrid based on current positions.

Mode 1 needs to maintain a comprehensive log of all past positions, requiring more memory and possibly more complex calculations to determine the historical average.

Adaptability:

Mode 0 adapts quickly to changes in the environment as it is based on current conditions.

Mode 1 offers a slower adaptation to immediate changes but is more robust against getting stuck in local optima due to its reliance on long-term data.

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Description automatically generatedA screenshot of a computer screen

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