CHAPTER 3
METHODOLOGY

3.1 PROBLEM DESCRIPTION

In the present work, the different path planning strategies for mobile robot application are proposed using different heuristic algorithms. Also, the path planning can be realized with polynomial equation. All the proposed path planning algorithms are realized by writing appropriate image processing code using Matlab programming.

3.2 OBJECTIVES OF THE PRESENT WORK

The following objectives of the present dissertation work have been formulated based on the literature survey:

- To simulate the mobile robot path planning without collision based on Bezier Polynomial Equation using Java programming.
- To obtain all feasible paths with obstacle avoidance using watershed algorithm through Matlab programming.
- To implement the tangent bug algorithm for generating optimal path for mobile robot application through image processing technique.
- To develop a simulation procedure for generating optimal path for warehouse simulation based on heuristic technique through Matlab programming.
- To generate optimal path for mobile robot application using Particle Swarm Optimization technique.
- To implement the Dijkstra Algorithm to obtain the path planning strategy for mobile robot application.
• To compare the performance of PSO and Dijkstra Algorithm based on computation time and the distance covered through simulation.

3.3 FLOW DIAGRAM OF PROPOSED METHODOLOGY

The flow diagram shown in Figure 3.1 describes the overall process of the proposed work.

![Flow Diagram of Proposed Methodology](image-url)

Figure 3.1 Flow diagram of proposed methodology of the research work