IDENTIFICATION OF PATH PHEROMONE CONCENTRATION USING CNN: A TOOL FOR INVERSE ANT ALGORITHM IMPLEMENTATION

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Abstract: The Inverse Ant Algorithm (IAA) is an enhanced ant algorithm that is a probabilistic technique in solving computing problems in graph theory like best path solution, communication and network optimization. Inverse Ant Algorithm mimics biological ants in finding the shortest path towards the food source. It uses pheromones to track down best path by following the smell of path ij and depositing its pheromone after it pass through the path ij. Path with high pheromone concentration is more likely chosen as the best path by ants as it traverse it. Path pheromone evaporates overtime therefore if path is not trodden its pheromone concentration will approach to zero thus making it undesirable. Currently, IAA uses constant pheromone capacity per agent, which does not reflect real world environments, as it passes through the nodes. CNN helps the Inverse Ant Algorithm identify current node pheromone concentration by identifying agents currently in the path which will triangulate pheromone concentration between IAA. IAA with CNN initial result shows increase of accuracy of IAA agents in finding the best path.

Keywords: Pheromone, Best Path, Pheromone Capacity, Agent