

Game AI

Tutorial 7 – Tactical & Strategic AI

1. What is the use of “**waypoints**” for tactical purposes? (Note that waypoints can also be used as “nodes” along a route for pathfinding too.)
2. While creating lots of tactical waypoints in an indoor room level may result in many disjointed and isolated locations. The AI character needs to constantly check for a nearby waypoint wherever it moves. This can be inefficient. How can we improve this?
3. In tactical analyses, what is the function of **influence maps**? Provide some examples of commonly used influence maps in military tactics of RTS games.
4. To calculate the influence of a NPC unit in a game, one of the most straightforward method is using “limited radius of effect”. Explain how this approach works.
5. Tactical analyses can have applied in different categories of complexity. What are the 3 categories, and indicate the direction of increasing complexity of computation.
6. How is **tactical pathfinding** different from regular pathfinding. What are its advantages and disadvantages?
7. The cost function used in tactical pathfinding is usually given by a general formula of the following type:

$$C = D + \sum_i w_i T_i$$

where C is the total cost of a connection, D is the distance of the connection; w is the weighing factor for each i -th tactic in the game; T is the tactical quality for the connection for each i -th tactic and i is the number of tactics supported.

- a) Elaborate on how this modified cost function can be used to control the kinds of routes an AI would choose.
 - b) Are negative-value weights (w) allowed?
 - c) In a group AI setting, how should we determine all the weight values (w) of different types of units in a group? Assume here that different type of units in a group have different w values.
8. What is a **top-down** approach and **bottom-up** approach in Multi-Tier AI?