

# Introduction to Artificial Intelligence

**DA 221**

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IIT Guwahati

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Lecture 09: Neeraj Sharma

# Search Problems

Discuss on implementation of solutions for some example search problems

- taking theory to code

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- Initial state
- Actions
- Transition models
- Goal test
- Path cost function

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# Solving Search Problems

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- a **state**
- a **parent** (node that generated this node)
- an **action** (action applied to parent to get node)
- a **path cost** (from initial state to node)

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## Approach

- Start with a **frontier** that contains the initial state.
- Repeat:
  - If the frontier is empty, then no solution.
  - Remove a node from the frontier.
  - If node contains goal state, return the solution.
  - **Expand** node, add resulting nodes to the frontier.



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Different approaches for removing nodes: Search methods

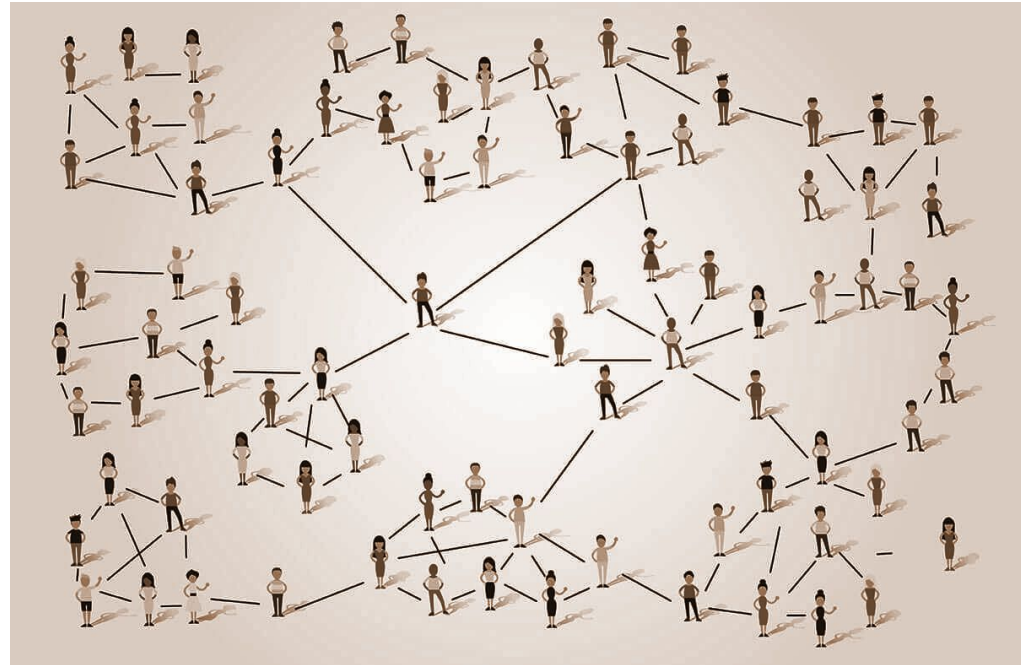
In how many hops are these two individuals connected?



**Six degrees of separation** is the idea that all people are six or fewer social connections away from each other.

As a result, a chain of friend of a friend statements can be made to connect any two people in a maximum of six steps.

It is also known as the **six handshakes rule**.  
(wikipedia)



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We will do a lab assignment on this.

