# Dr.SNS RAJALAKSHMI COLLEGE OF ARTS AND SCIENCE
## (Autonomous)

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Coimbatore- 49

## DEPARTMENT OF COMPUTER SCIENCE

## (ARTIFICIAL INTELLIGENCE & ROBOTICS)

# Artificial Intelligence and advanced robotics techniques

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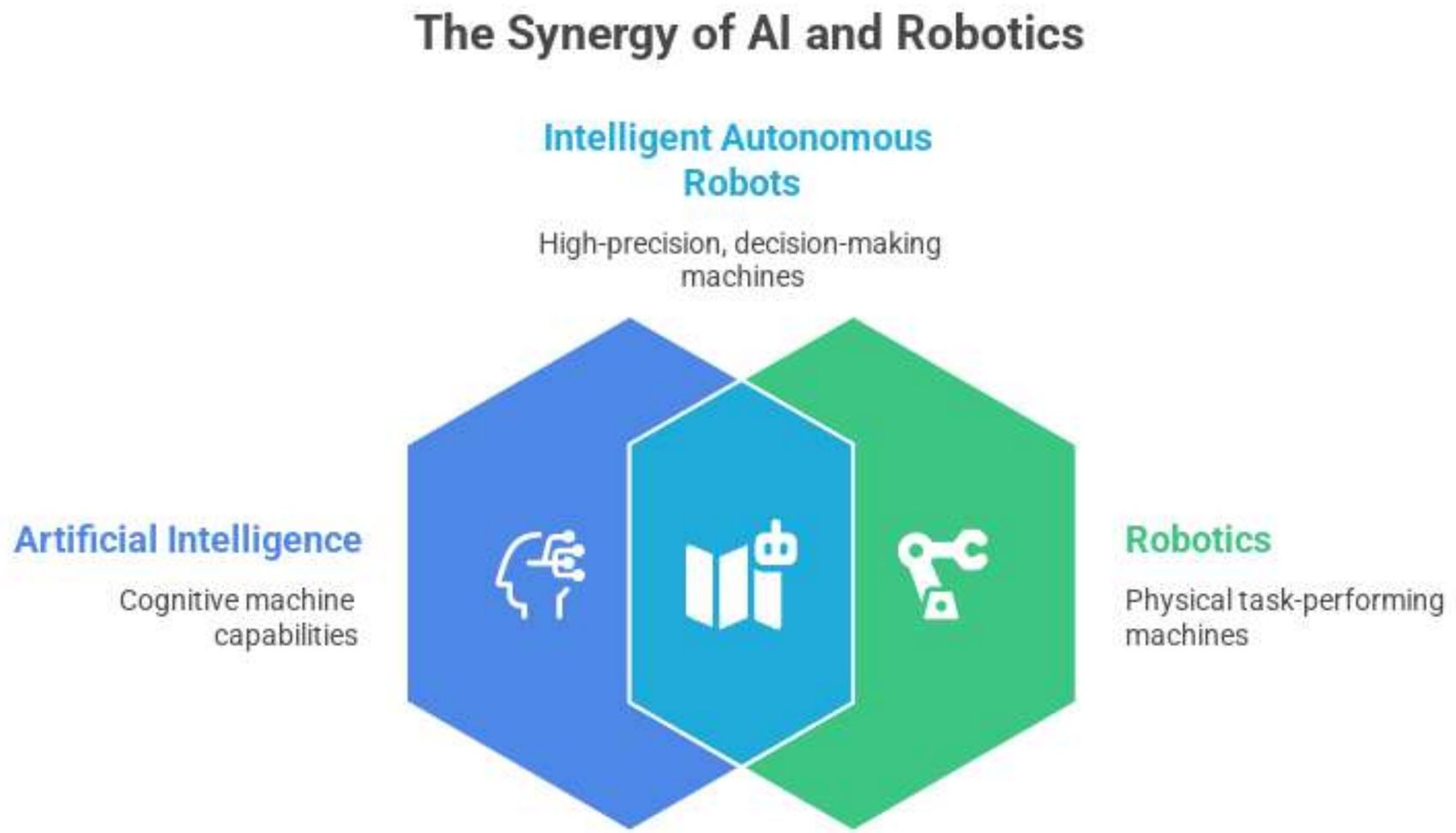
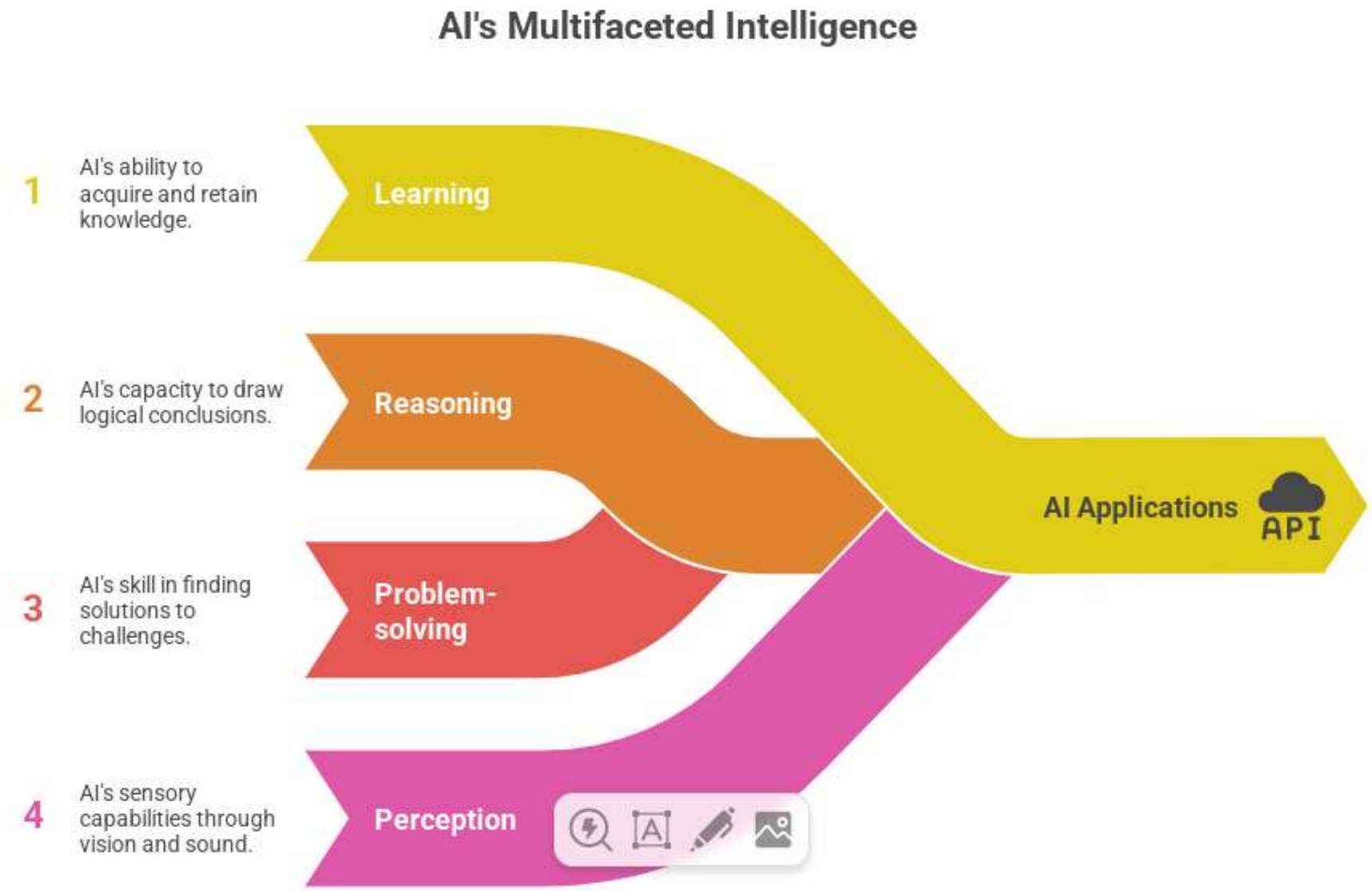
# DT- Stages in a Robotics

| Stage | Meaning | Example (AI Context) |
|---|---|---|
| **Empathize** | Understand user needs and problems. | Users need faster decisions, automation, and smart solutions. |
| **Define** | Clearly identify the problem. | "How can machines think or make decisions like humans?" |
| **Ideate** | Generate possible AI-based ideas. | Speech recognition, image detection, chatbots, automation tools. |
| **Prototype** | Build a simple working model. | Basic chatbot, small ML model, demo of image classification. |
| **Test** | Check if the solution works well. | Test accuracy, user satisfaction, decision quality. |

# Introduction



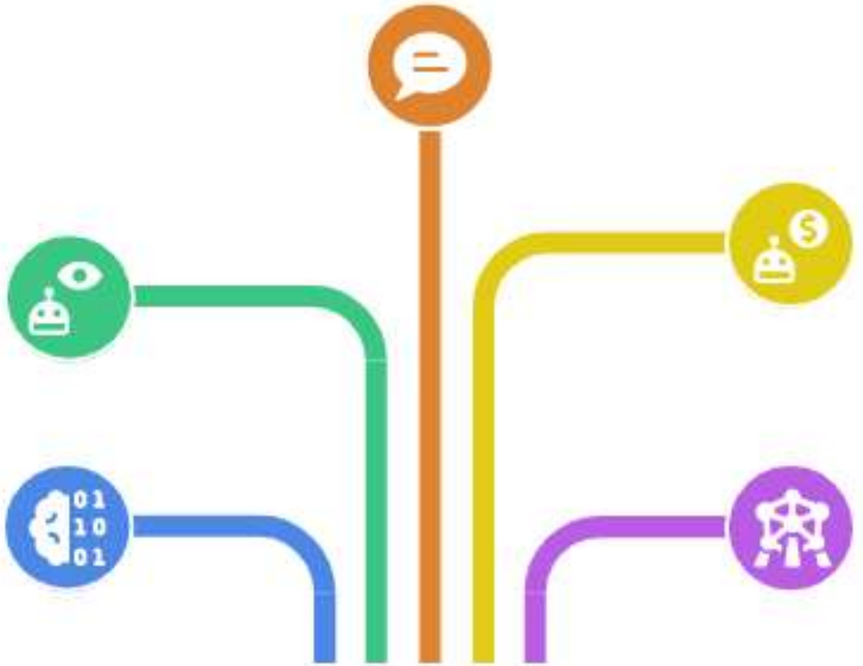
# Artificial Intelligence Overview



# Core AI Techniques Used in Robotics

## Natural Language Processing

Enables robots to understand and respond to human commands.



## Computer Vision

Essential for robots to perceive and interpret visual information.

## Machine Learning

Ideal for recognizing patterns and making predictions from data.

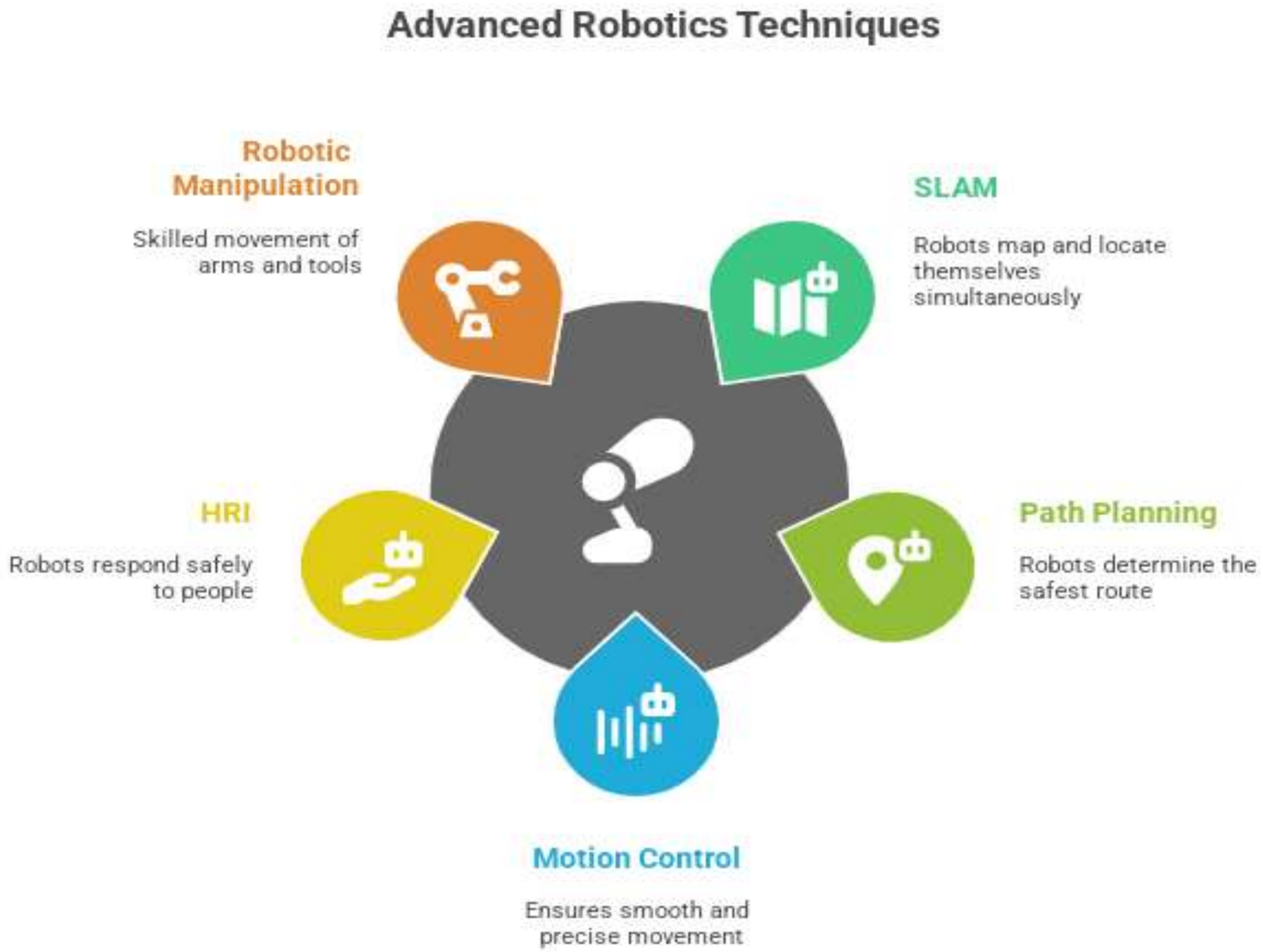
## Reinforcement Learning

Effective for robots to learn through trial and error with rewards.

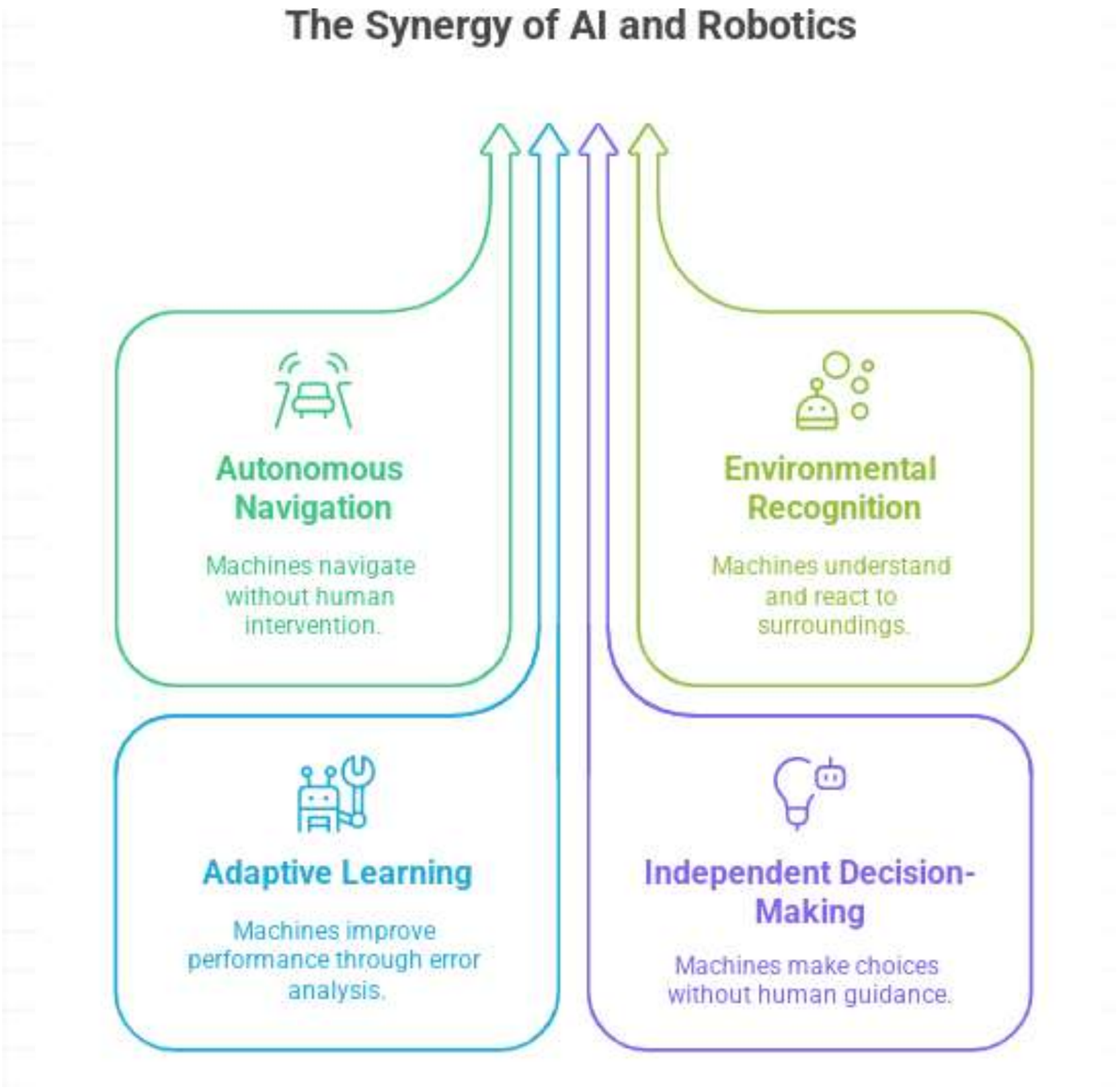
## Neural Networks

Suitable for complex decision-making and advanced tasks.

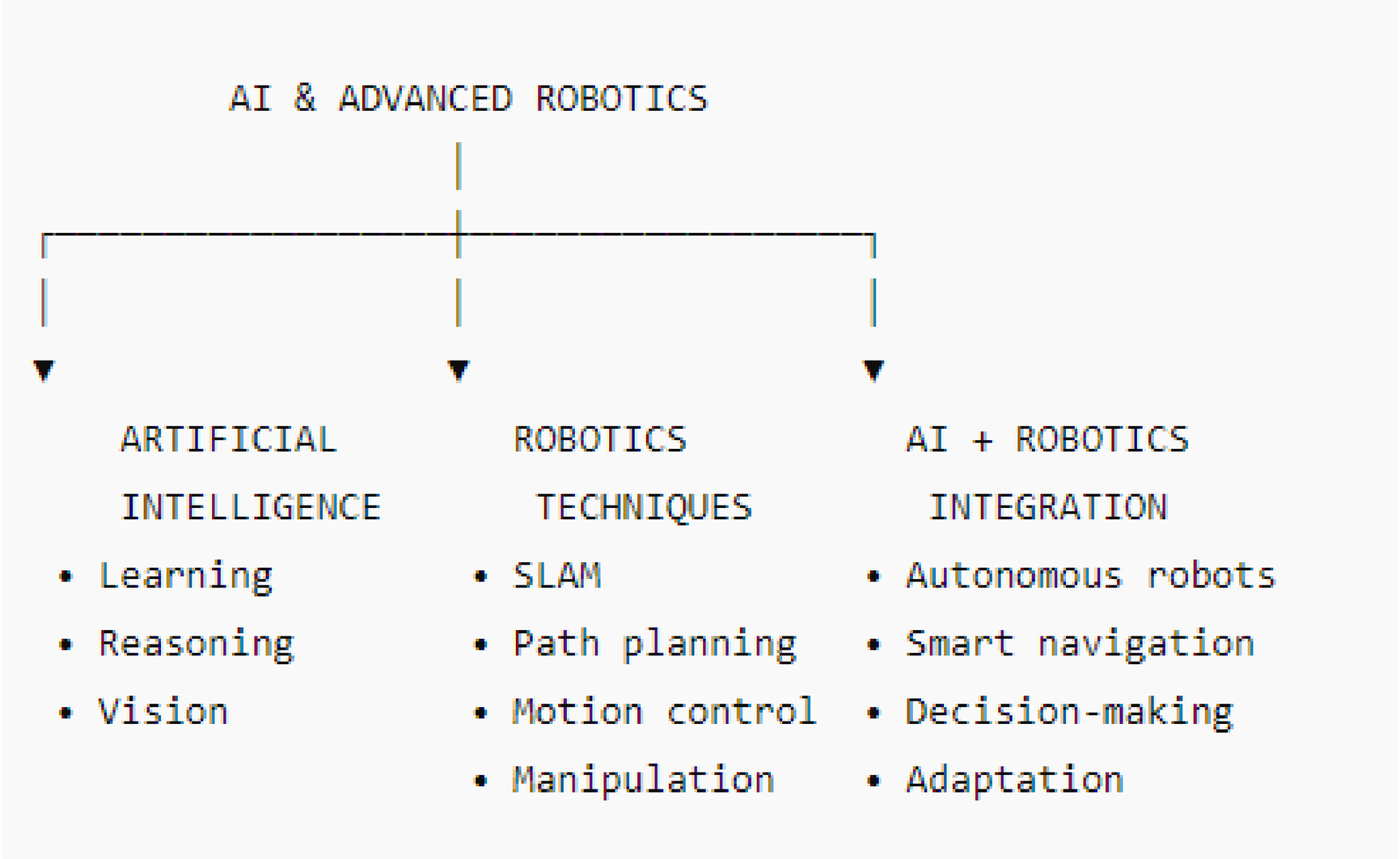
# Advanced Robotics Techniques



# Integration of AI in Robotics



# Mind Map


AI & ADVANCED ROBOTICS
ARTIFICIAL INTELLIGENCE
• Learning
• Reasoning
• Vision
ROBOTICS TECHNIQUES
• SLAM
• Path planning
• Motion control
• Manipulation
AI + ROBOTICS INTEGRATION
• Autonomous robots
• Smart navigation
• Decision-making
• Adaptation

# QUIZ

1. What does AI mainly enable robots to do?

A. Store electricity B. Think and make decisions C. Work only manually D. Move without sensors

2. Which technique helps robots understand images and objects?

A. Computer Vision B. SLAM C. Path Planning D. Motion Control

3. SLAM in robotics is used for:

A. Charging batteries B. Mapping and locating the robot C. Speaking in natural language D. Increasing robot strength

4. Reinforcement learning allows robots to learn through:

A. Guessing B. Rewards and penalties C. Manual programming only D. Removing sensors

5. Which is an example of AI + robotics integration?

A. Simple electric fan B. Self-driving car C. Paint bucket D. Manual screwdriver

# QUIZ

1. B. Think and make decisions
2. A. Computer Vision
3. B. Mapping and locating the robot
4. B. Rewards and penalties
5. B. Self-driving car

# THANK YOU