**Reinforcement Learning (RL):** A machine learning approach where an agent learns to make decisions through trial and error, receiving rewards for beneficial actions in a given environment.

**Markov Decision Process (MDP):** A mathematical framework in RL for decision-making in environments where outcomes are partly random and partly under the control of the decision-maker.

**Q-Learning:** An algorithm in RL that estimates the value of taking a certain action in a given state, updating these estimates based on observed rewards and future expectations.

**Deep Reinforcement Learning (DRL):** An advanced form of RL that combines neural networks with RL principles, enabling agents to learn optimal actions in complex, high-dimensional environments.

**Value-Based Algorithms:** A category of DRL methods focusing on learning the value of each possible action in a state and choosing actions based on these values.

**Policy Gradient Algorithms:** A category of DRL methods that directly learn a policy function, mapping states to action probabilities, and optimize this policy based on the gradients of expected rewards.

**Deep Q-Network (DQN):** A value-based DRL algorithm that uses deep neural networks to approximate the value function, aiding in decision-making in complex environments.

**Actor-Critic Methods:** DRL algorithms that combine policy gradient and value-based approaches, using two models: an actor to choose actions and a critic to evaluate these actions.

**Multi-Agent Deep Reinforcement Learning (MADRL):** An extension of DRL to scenarios involving multiple interacting agents, addressing complexities like coordination and competition.

**Markov Games:** A generalization of MDPs for multiple agents in MADRL, considering the interactions between agents in cooperative, competitive, or mixed environments.

**Cooperative, Competitive, Mixed Interactions:** Types of interactions in MADRL, where agents may work together (cooperative), against each other (competitive), or a combination of both (mixed).

**Independent vs. Joint Learning:** Approaches in MADRL where agents either learn their policies independently or jointly, impacting the way they interact and make decisions.

**Particle Swarm Optimization (PSO):** A computational technique inspired by the social behavior of animals like birds and fish. It's used to find optimal solutions in complex, multi-dimensional search spaces by simulating the movements of a swarm.

**Swarm Intelligence:** An artificial intelligence paradigm based on the collective behavior of decentralized and self-organized systems, typically natural like insects or animal groups.

**Evolutionary Computation:** A subset of artificial intelligence involving algorithms that mimic biological evolution, such as mutation, selection, and crossover, to solve problems.

**Fitness Function:** A type of objective function in optimization and genetic algorithms that quantifies the optimality of a solution (particle) in a search space.

**Global Best:** In PSO, the best position or solution found by any particle in the entire swarm up to the current iteration.