Introduction To Reinforcement Learning

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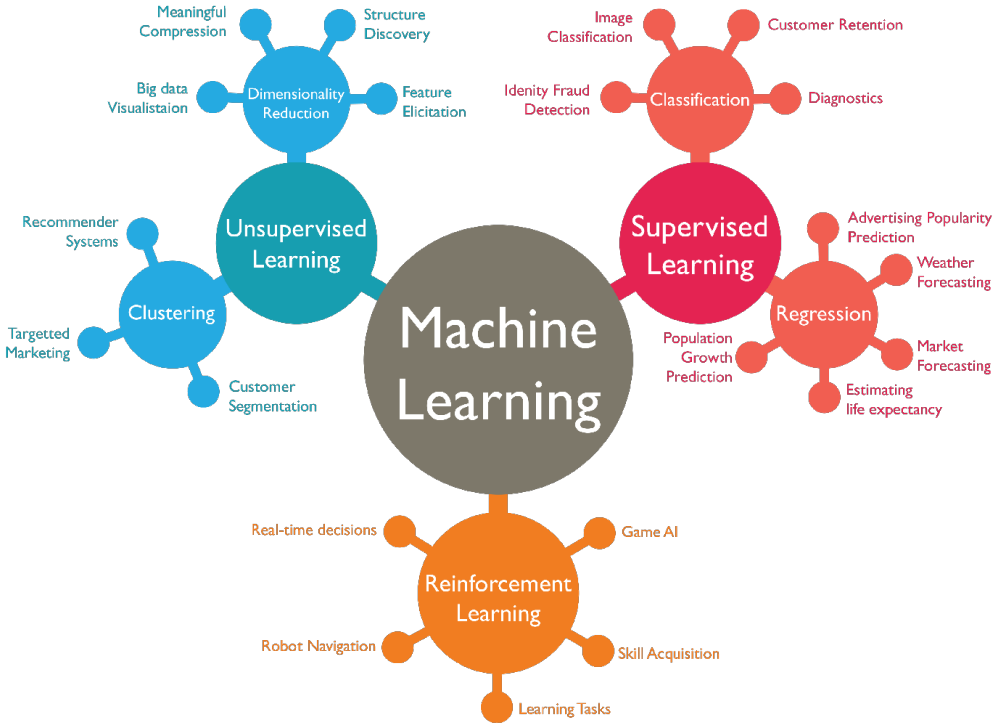
Types of Machine Learning



Source: https://www.linkedin.com/pulse/business-intelligence-its-relationship-big-data-geekstyle

Outline

- Intuition of Reinforcement Learning(RL)
- Scientific Concept of Reinforcement Learning
- Types of Reinforcement Learning
- Applications of Reinforcement Learning

Reinforcement Learning MDP

Terminologies Used in RL

1. **Agent:** Learning algorithm

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4. **State:** current condition environment returns
5. **Reward:** instance returned to appraise last action
6. **Policy**: approach to determine next action

Reinforcement Learning MDP

For $t = 0, 1, 2 \cdots$
$S_t \in S, R_t \in R, A_t \in A$

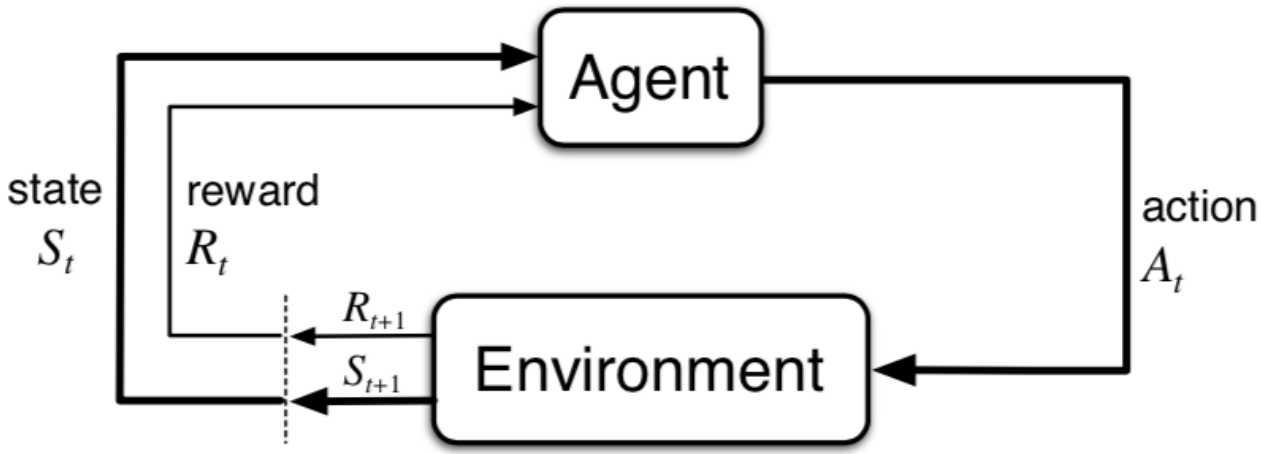
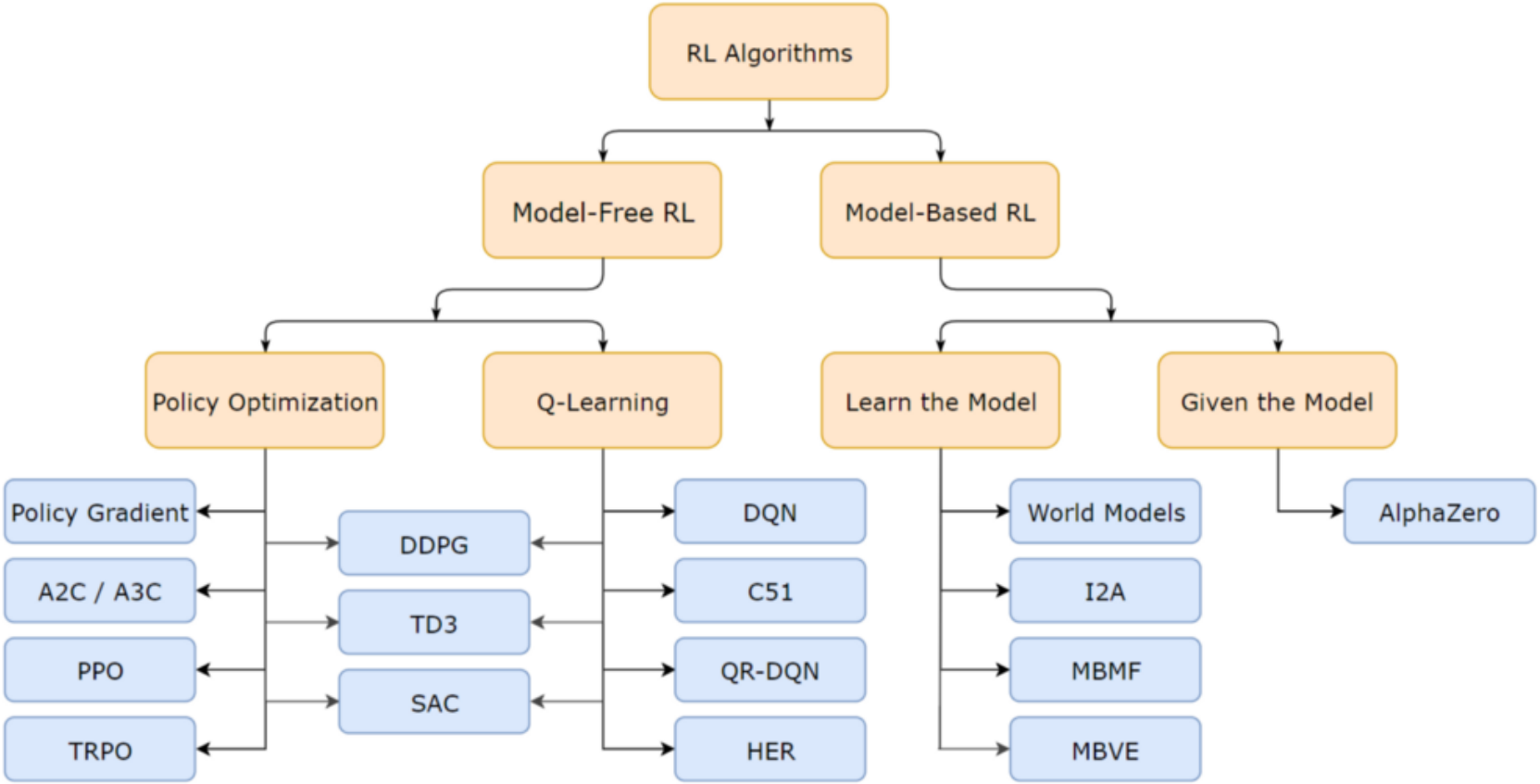


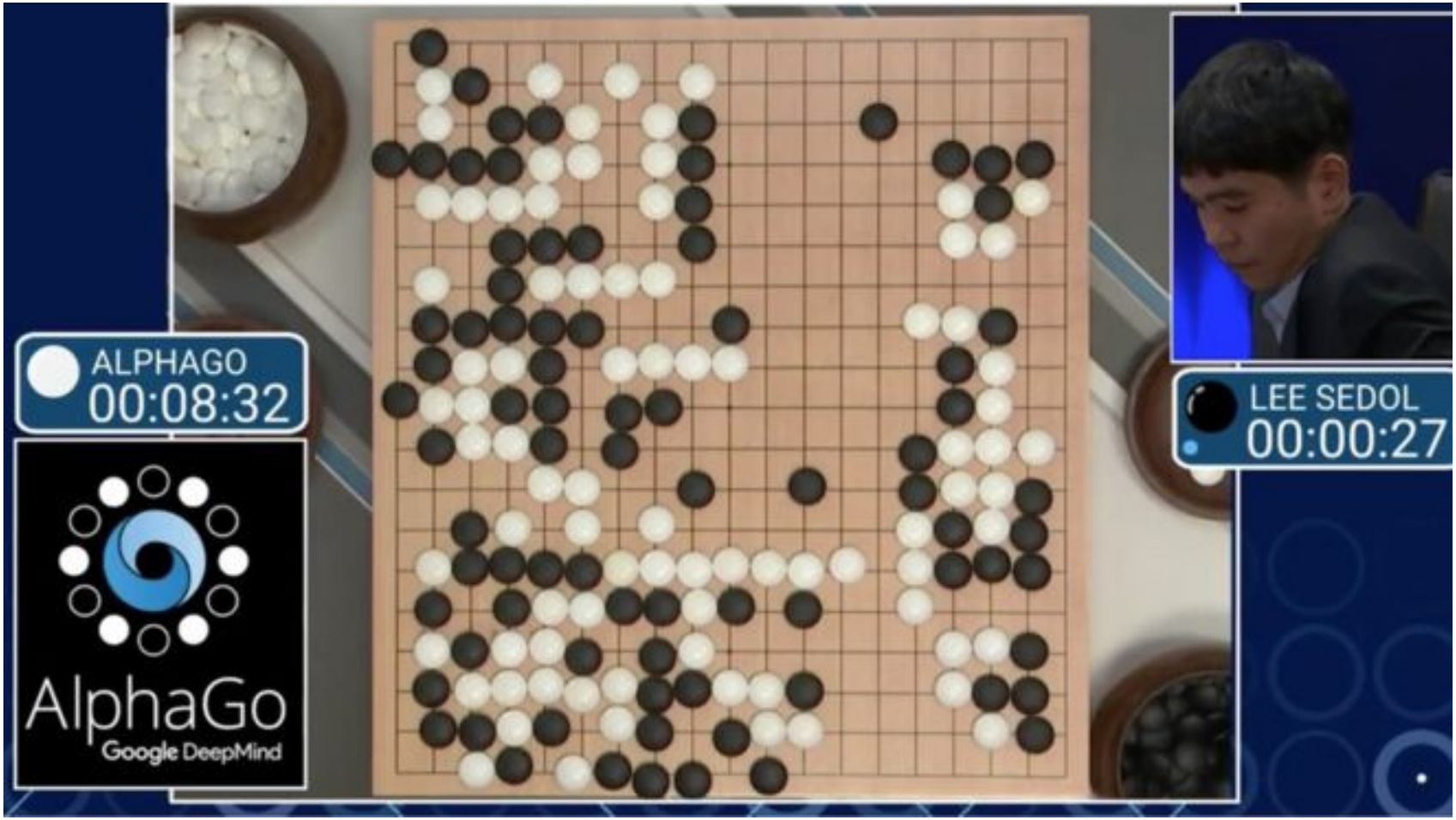
Figure 3.1: The agent–environment interaction in a Markov decision process.

Reinforcement Learning Algorithms



Source:
https://spinningup.openai.com/en/latest/spinningup/rl_intro2.html

Applications of Reinforcement Learning- Alpha Go



Source: https://www.bbc.com/news/technology-35785875

Applications of Reinforcement Learning- Watson

Source: https://www.masslive.com/entertainment/2011/02/ibms_

Other Areas of Applications

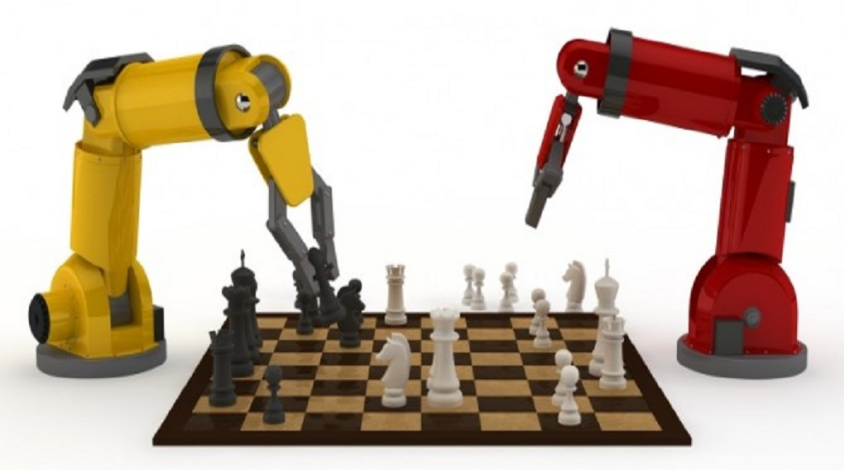


Figure: Chess

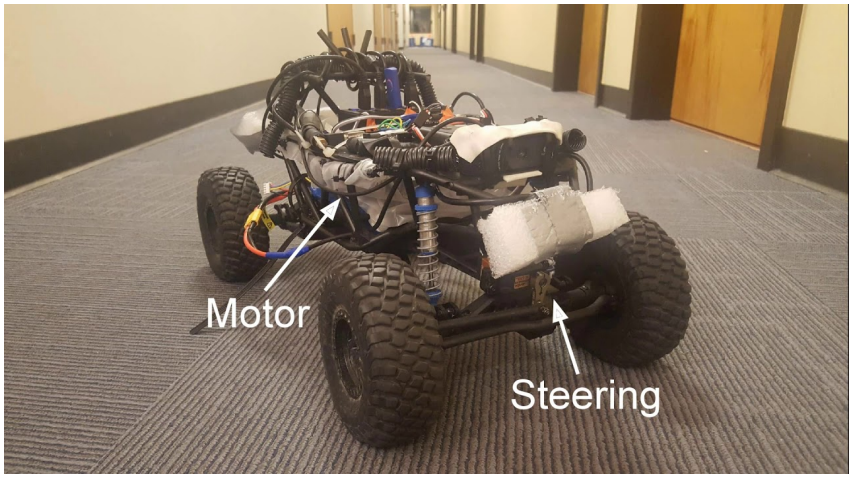


Figure: Robort Navigation

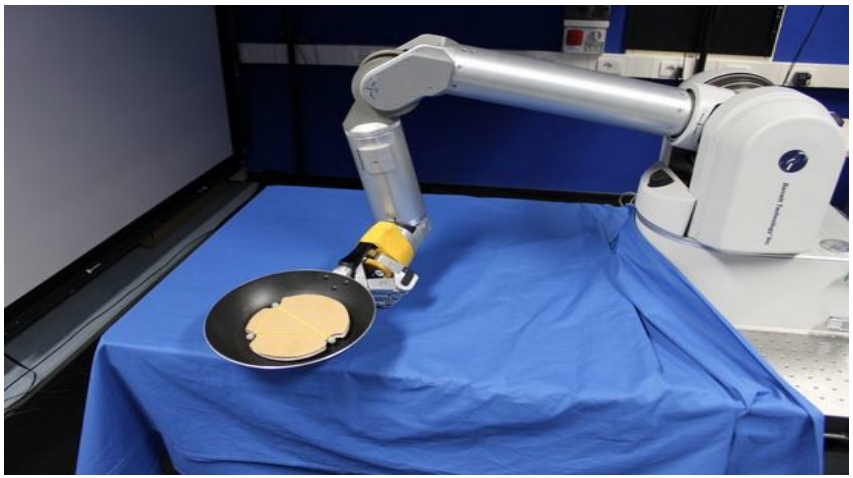


Figure: Pancake FLip

Figure: Traffic Monitoring