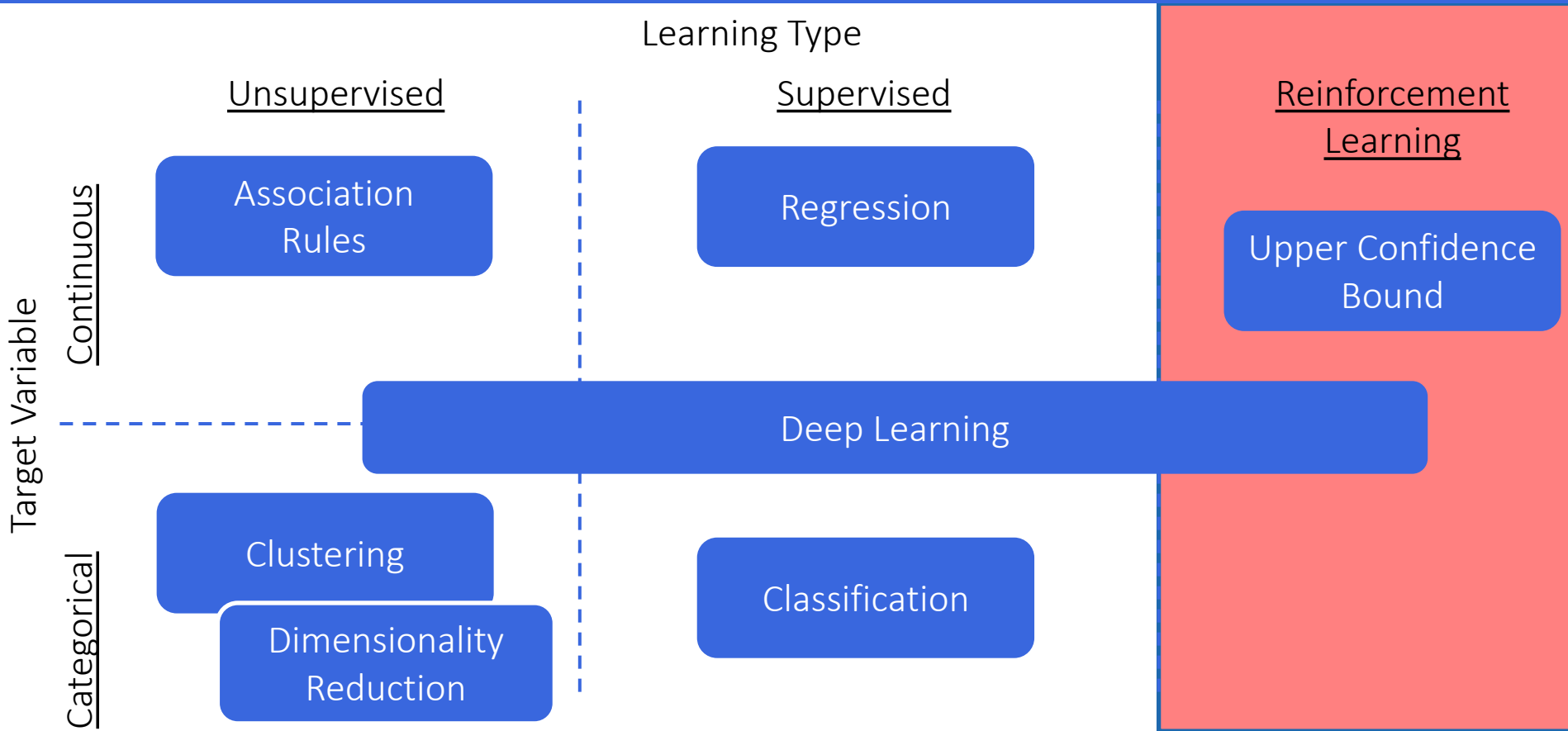
Reinforcement Learning 101

Reinforcement Learning

Machine Learning Map



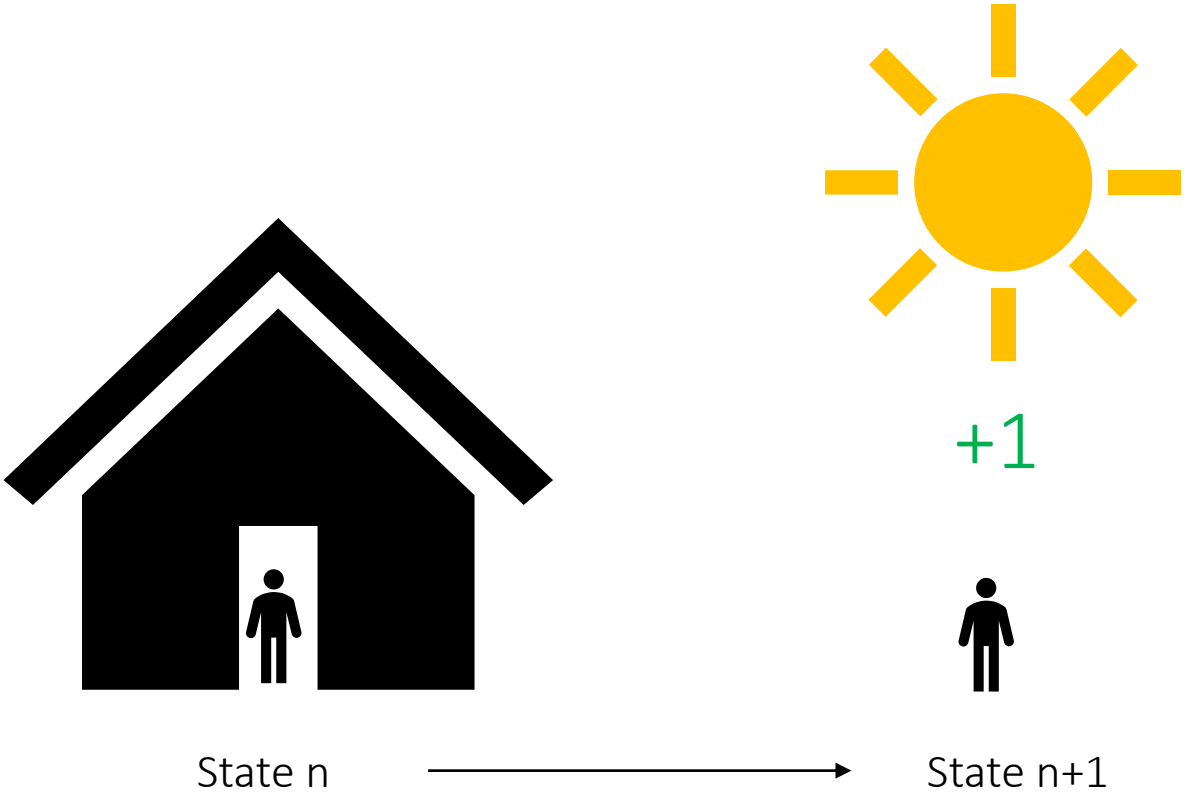
Reinforcement Learning

Introduction

- type of Machine Learning
- components:
  - agent,
  - environment,
  - state,
  - reward
- process involves trial and error
- exploration / exploitation

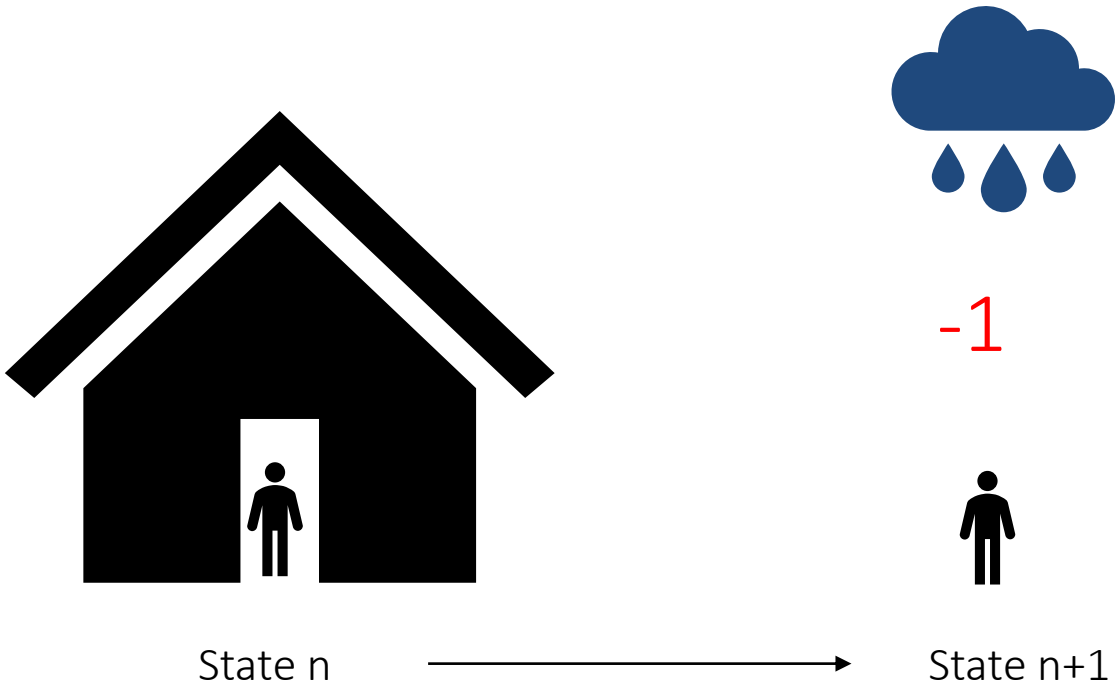
Reinforcement Learning

Simple Example



Reinforcement Learning

Simple Example



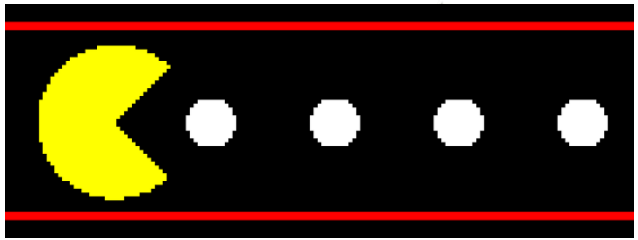
Reinforcement Learning

Simple Example

Reinforcement Learning

Examples

Games



Robotics

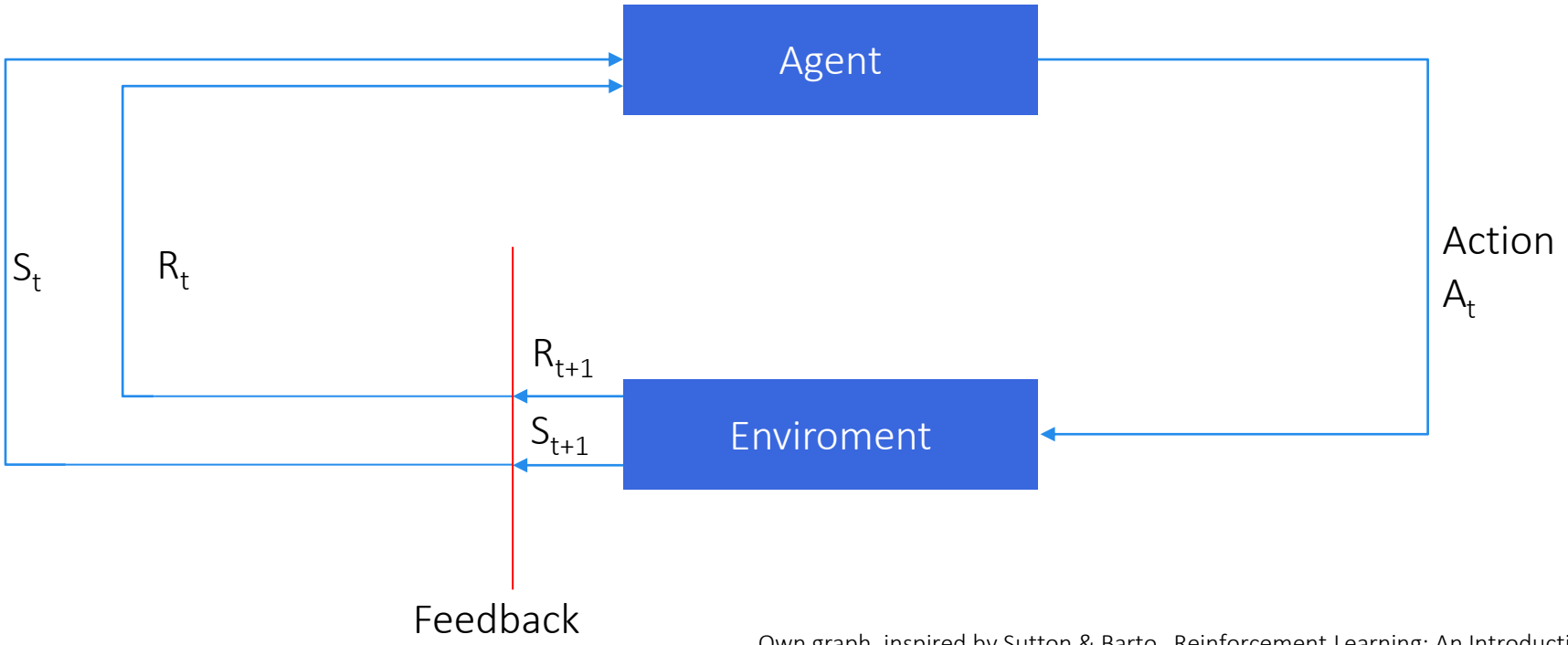
Source: https://www.bostondynamics.com/atlas

Self-Driving Cars

Source: https://upload.wikimedia.org/wikipedia/commons/thumb/c/cf/Waymo_self-driving_car_front_view.gk.jpg/220px-Waymo_self-driving_car_front_view.gk.jpg

Reinforcement Learning

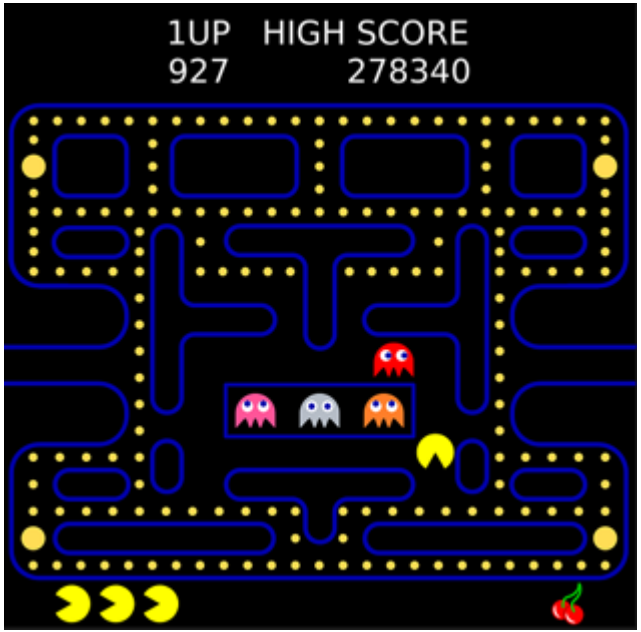
Process



Own graph, inspired by Sutton & Barto „Reinforcement Learning: An Introduction“

Reinforcement Learning

From RL to Deep RL



Convolutional Neural Network

Environment

Reward

State

Reinforcement Learning

Action