Machine learning

Sunday, October 22, 2023 11:01

- Induction v. Deduction
    - Induction → going from a specific set of observations to a general rule
        - Observations that the sun rose everyday in tee past - induce that the sun will come up tomorrow
        - Inductive conclusions might be incorrect
    - Deduction → conclusions are guaranteed to be connect if the premises are connect
- Factored representation- vector of attribute values
- output:
    - A finite set of values → classification
    - Number (tomorrow's temperature) → regression
- Types of feedback (from inputs):
    - Determine the main types of learning
    - Supervised learning:
        - Agent observes input-output pairs and learns a function that maps from input to output
        - Label → "bus" on images (output)
        - Outputs are obtained by the agent from its own precepts after the fact - environment is the teacher and the agent learns a function that maps States to stopping distance
    - Unsupervised learning:
        - Agent learns patterns in the input without any explicit feedback
        - Most common task: clustering → detecting potentially useful clusters of input examples
        - ex. Can identify large clusters of similar images called "cats"
    - Reinforcement learning :
        - agent learns from a series of reinforcements - rewards and punishments
        - ex.at the end of a chess game the agent is told that it has won (a reward) or lost (a punishment)
        - It is up to the agent to decide which of the actions prior to the reinforcement were most responsible and after its actions to aim towards more rewards in the future