

Learning to control

① S.S. Day

Familiar models of machine learning
- Learning from data (Instruction)

How did you learn to cycle?

- Trial and error!
- Falling down hurts
- Evaluation, not instruction
- Reinforcement learning.

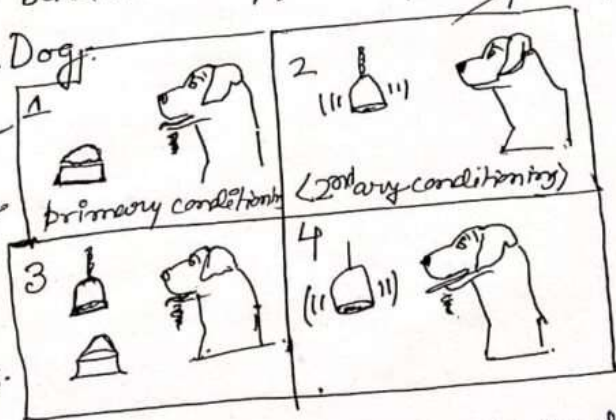
Other example: walk, talk, etc.

Reinforcement Learning

- A trial & error learning paradigm.
 - Rewards & punishment
- Learn about a system through interaction
- Inspired by behavioural psychology!

[From Pavlov] Pavlov's Dog.

• While studying digestion in dogs, he discovered classical conditioning - a type of learning where a neutral stimulus becomes associated with a meaningful stimulus.



The experiment:

- ① Before conditioning: Food → Dog salivates (natural reflex)
Bell → No salivation
- ② During conditioning: Bell is rung right before food is given multiple times.
- ③ After conditioning: Bell alone → Dog salivates.