Intelligent Agents

Robots?

Sensors and actuators.

What is rational? Depends on:
- Percept sequence
- Actions that can be taken
- Prior knowledge
- Performance measure - how to identify success
- Learning? Along the way, or from previous runs

Examples
- Automatic vacuum cleaner
- Self-driving car
- Chess player
- Speech understander

Task environment
- Sensors
- Actuators
- Environment
  - Fully or partially observable?
  - Deterministic or non-deterministic?
  - Episodic or sequential?
  - Static or dynamic?
- Performance measure

Agent programs
- Maps percept sequences to actions
  - Big table? Chess 10^{150}
  - Small program - logarithm tables - the whole point of programming
- Learning?
- Different styles:
  - Reflex - current percept only
  - Model based - keep track of unobservable parts
  - Goal based - current state is not enough
  - Utility - faster / more efficiently - but isn't that a goal?

Rational Agents
- What is rational at any point in time?
- Depends on:
  - Prior knowledge of environment
  - Percept sequence up to now
  - Actions that can be performed
  - Performance measure
- For each possible percept sequence,

Should take the action
that is expected to maximise performance measure
given the evidence and knowledge provided

- Rationality is not perfection