Agent-Oriented Software Engineering - 02_Intrduction_to_Agents_and_Multi-Agent_Systems

Francesco Penasa

February 22, 2020

`2020/02/18`
`02 to slide 30`
Computers are not very good at knowing what to do, then we elaborate a runtime reaction for unpredictable situation.

Capability

1. elaborate a new plan
2. **tradeoff**: limited time to react

We can't anticipate all the possible situation but we can think about a software that can react them. *Example: software that can decide itself what to do (stock market bot, diagnostic software for medicine)*

Delegate the activity of the software behave and act on human behalf, interconnection + distribution + delegation

1. Social abilities

Agent and its environment An agent react to some observation of the environment that have been done.

1 Agent attributes

1. proactiveness
2. reactivity
3. social ability

2 Role/goal vs. Task

We assign *tasks* to software. We assign *roles/goals* to agents Higher level of conceptualization

3 Multi-agent

In most cases, a signle agent is not enough. Agents interact with one-another. To successfully interact, they will require the ability to **cooperate, coordinate and negotiate** with each other. (examples of robots that moves an object)

1. Interaction: between agents
2. local and organization interest: relationships and rules
3. organizational structure

Maximize the cohesion: intra-actions within a subsystem **Minimize the coupling**: inter-actions among subsystems.

4 Example of agents

1. Any control system can be viewed as an agent (thermostat)

We can explicit goals without exlpicit tell how to communicate thanks to the role (example robot soccer)