CIS 677: Lecture 1

Class September 26, 2005

Definitions

**Intelligent Agents**

- **Agent**
  
  “An agent is a computer system that is situated in some environment and that is capable of autonomous action in this environment in order to meet its design objectives” (Wooldridge, 2002)

  - **Situated** – exists in an environment
  - **Autonomous** – independent, not controlled externally

- **Intelligent Agent**

  “Intelligent agent adds reactive, proactive and social to agent.” (Wooldridge, 2002)

  - **Reactive** – responds (in a timely manner) to changes in its environment
  - **Proactive** – persistently pursues goals
  - **Social** – interacts with other agents

**Other Attributes**

- Robust by being flexible
- Rational (as in human rationality) – problem solving, inferencing, planning
- Capable of learning

Differences between IA and Distributed Objects

**Distributed Object**

- Encapsulated state (data), behavior (function) and has a set of methods to manipulate state.
- Objects used by other objects to perform actions.

**Multi-agent System**

- Software entities that autonomously perform actions
- Complex internal state includes goals
- Non-deterministic
- Collection of goal-oriented software entities that cooperate to achieve a single application goal
- Events -> evaluation of conditions (state) through rules, inferencing and learning -> action

Why are IA useful?
Reduce coupling
Autonomous: encapsulating invocation
Persistent in achieving goals
Benefit: modularity, decentralized, changeable

Useful in environments which are dynamic, unpredictable, unreliable
Applications with interaction with humans or require human-like behaviors

Types of Intelligent Agents
IA acting on Software or Data
Example: mobile agent for network load balancing

IA acting on Human
Example: Poker bot in chat room poker game

IA acting on Software or Data & Human
Example: Looking for interesting news items on Web
Example: UI assistant to help with task performance

IA negotiating with other IA & Human
Example: Meeting Scheduling