

**Intelligent Autonomous Agents**  
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**Lecture #1B**  
**Agent Applications**

- Physical types of agents
  - Biological
  - Softbots
    - Soccer
    - Pilot
    - Deep space I
  - Robots
    - Roomba
    - Soccer
    - Rescue
- Applications (skim Ch. 9)

**Broad Range of Agent Application Areas**

- Healthcare/Medicine
- Bioinformatics
- Workflow management
- Network management
- Air traffic control
- Business process engineering
- Smart databases
- Command and control
- Education
- Telecommunication services & management
- Digital libraries
- Personal digital assistants
- Diary management
- E-mail filtering
- Information management
- Data mining
- Electronic commerce
- Service creation and deployment
- Web-based applications
- Multimedia management
- Mobile services

**What is an Autonomous Agent?**

**Interacts with its environment**

1. can sense its environment
2. make decisions, and
3. take action

Sensors: eyes, sonar, ...

Effectors: hands, motors, ...

**(Physical) Types of Autonomous Agents**

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graph TD; Agents[Agents] --> Biological[Biological Agents]; Agents --> Software[Software - Softbots]; Agents --> Hardware[Hardware - Robots]; Biological --> Cat[Cat]; Software --> AL[Artificial Life]; Software --> Task[Task specific]; Hardware --> Ent[Entertainment]; AL --> Virus[Virus]; Task --> Char[Character]; Ent --> Robot[Robot];
```

**Software Agents - Softbots**

- “Live” inside computers and networks
- Percepts: text, images, bits,
- Actions: display information, send messages, ...
- Examples: simulated pilots, Electric Elves, chat room ‘bots’, MS “paperclip”, ...

Sensors: networks, keyboards, ...

Effectors: networks, monitors ...




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### Robotic Agent Applications

- Deep sea exploration and salvage
- Nuclear power plants
- Land mine searching and sweeping
- Vacuum cleaning
- Shopping
- Search and Rescue
- Games (soccer ...)

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### Roomba Robotic Vacuum



Stair Avoidance Detector

Non-Marring Bumper

Easy to Grab Handle

Pick it up and it stops!

Rechargeable NiMH Battery

Anti-Skid Padding

Lightweight (under 6 lbs. with battery!)

Virtual Wall Unit

Wall Following Sensor

13.4"



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### Legged Robot Soccer Game

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### Search and Rescue – WTC Disaster Site Robot

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### Summary

- Agent Applications
  - Software agents
  - Robotic Agents
- Ideas for your project!

