INTRODUCTION TO ARTIFICIAL INTELLIGENCE

Hello!

I am **Jahanzeb Naeem**

1 Purpose

Purpose

◉ To teach you the basics of AI

◉ To excite you.

2 Structure

Structure
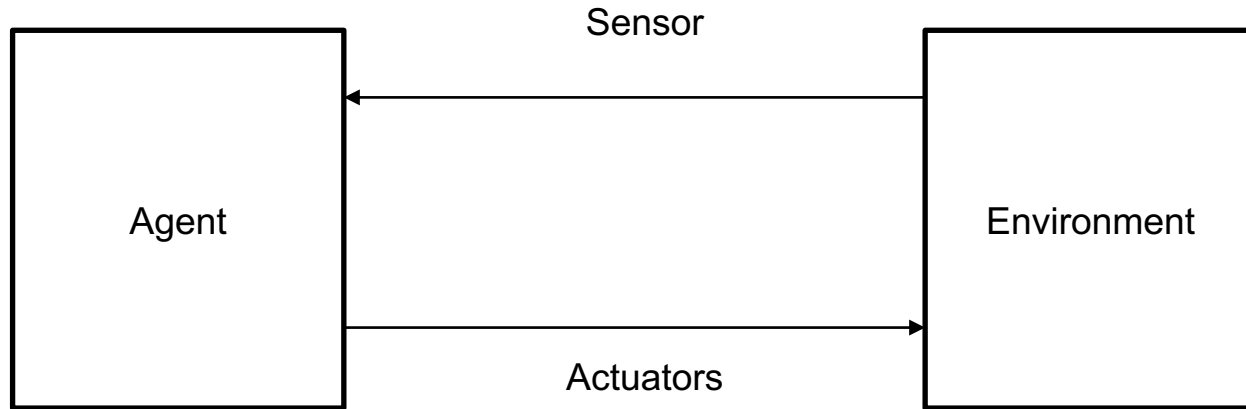
- Classes
- Quizzes
- Assignments
- Exams

Quiz

A AI program is called
- Wetware
- Formula
- **Intelligent Agent**

3 Intelligent Agent

Intelligent Agent

```
┌─────────────┐              Sensor              ┌─────────────┐
│             │ ◄──────────────────────────────  │             │
│             │                                   │             │
│    Agent    │                                   │ Environment │
│             │                                   │             │
│             │ ──────────────────────────────►   │             │
└─────────────┘             Actuators             └─────────────┘
```

◉ The complete cycle is know as Perception - Action Cycle.

4 Quiz

📌 Quiz

- AI has successfully used in
  - **Finance**
  - **Robotics**
  - **Games**
  - **Medicine**
  - **The Web**
  - None of them

5 AI Implementations

AI in Finance

Trading Agent

Rates

News

Trades

Stock Market
Bonds
Commodities

AI in Robotics

Cameras
Microphones
Touch

Motors
Voice

Environment

AI in Medicine

Diagnostic Agent

You

Doctor

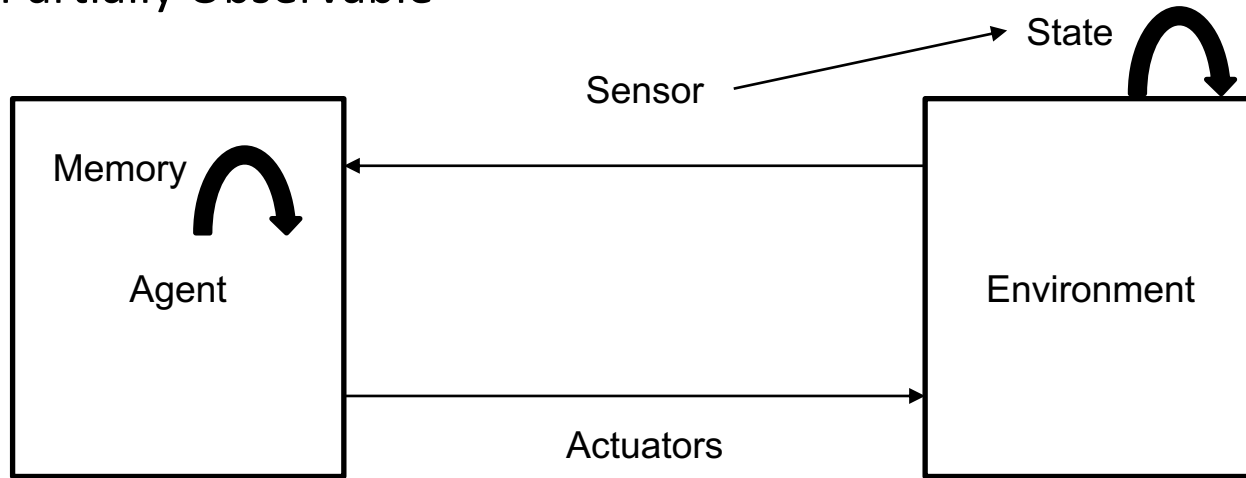Vital signals

Diagnostics
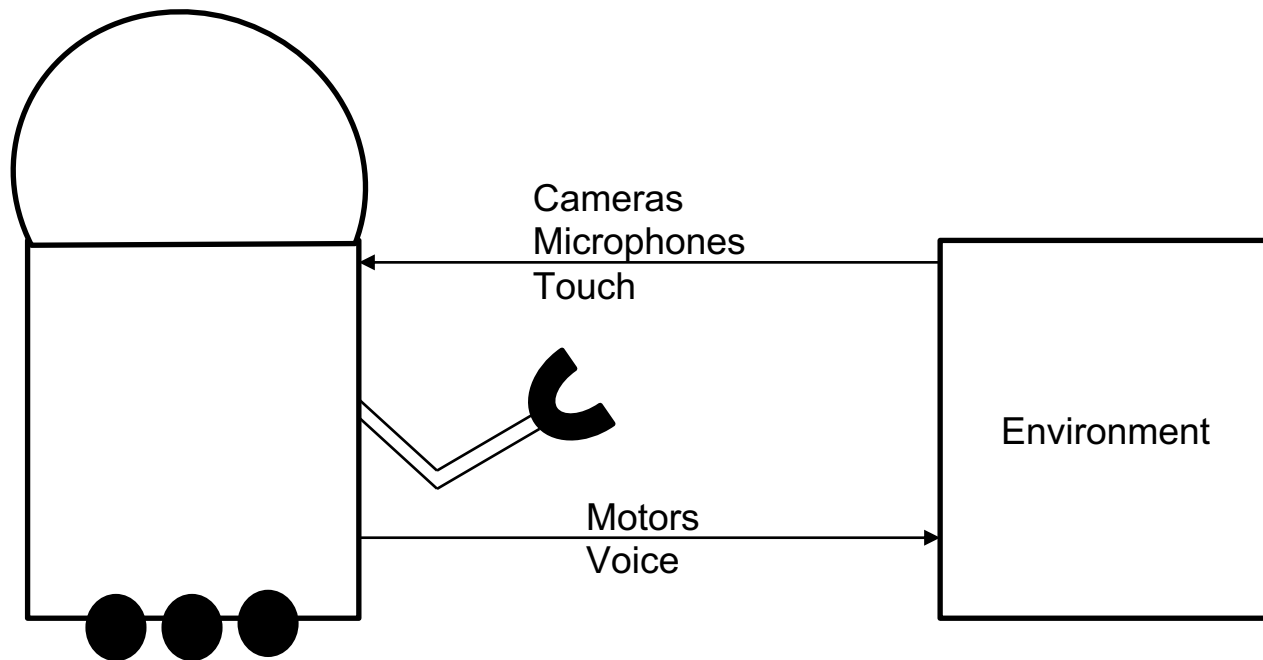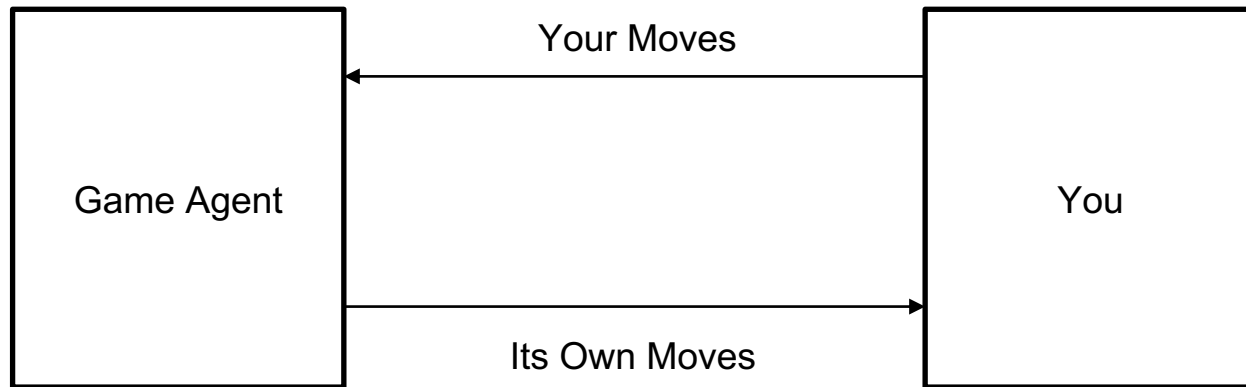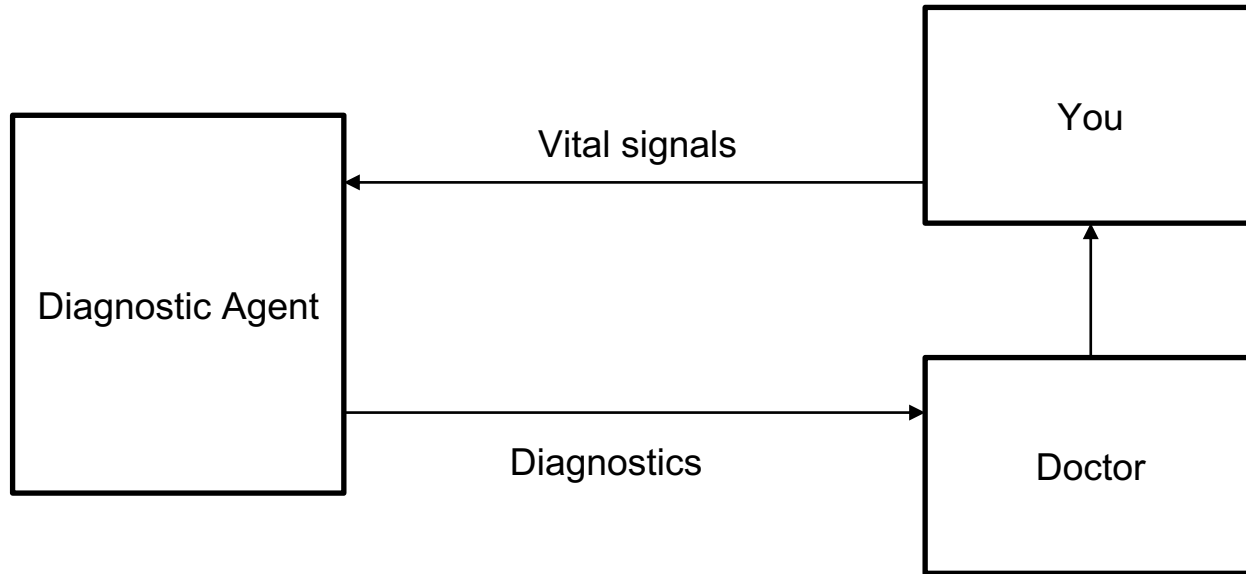
6 **Terminology**
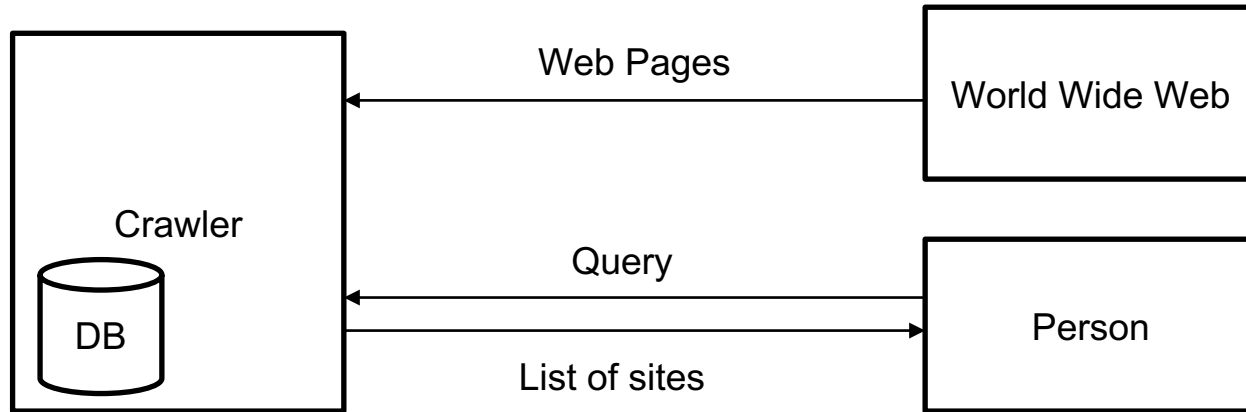
Fully vs Partially Observable

Terminologies

- Fully vs Partially Observable
- Deterministic vs Stochastic
- Discrete vs Continuous
- Benign vs Adversarial

Quiz

	Partially Observable	Stochastic	Continuous	Adversarial
Checkers	No	No	No	Yes
Poker	Yes	Yes	No	Yes
Robot Car	Yes	Yes	Yes	No

7 AI as Uncertainty Management

AI as Uncertainty Management

◉ AI = What to do when you don't know what to do?

◉ Reasons of Uncertainty
  ○ Sensor Limits
  ○ Adversaries
  ○ Stochastic Environments
  ○ Laziness
  ○ Ignorance

Example

◎ Machine Translation System

Summary

Summary

- Key Applications of AI
- Intelligent Agent
- 4 Key Attributes
- Sources of Uncertainty
- Rationality