PEAS Description of Agents

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Artificial Intelligence Chatbot

- **Performance measure:** Accuracy of responses, user satisfaction, response time, conversation length.
- **Environment:** User queries, digital interface, text input/output.
- **Actuators:** Text display, message sending capabilities.
- **Sensors:** Text input recognition, user feedback mechanisms.

Properties of chatbot

- **Observable:** Partially observable. The chatbot can't access all user information or external factors influencing the user's queries.
- **Deterministic/Nondeterministic:** Nondeterministic. User input can be unpredictable and the chatbot may not always respond the same way due to learning algorithms.
- **Episodic/Sequential:** Sequential. Each interaction can affect the next.
- **Static/Dynamic:** Dynamic. The environment can change during the conversation, as new information is provided by the user.
- **Discrete/Continuous:** Discrete. The conversation is turn based.

Medical Diagnosis System

- **Performance measure:** Diagnostic accuracy, treatment effectiveness, patient outcomes, adherence to medical guidelines.
- **Environment:** Patient symptoms, medical records, clinical guidelines, diagnostic tools.
- **Actuators:** Display of diagnosis, treatment plans, alerts.
- **Sensors:** Input of patient data, medical imaging, lab test results.

Properties of medical diagnosis system

- **Observable:** Partially observable. The system has limited information based on the input data and can't observe the patient totally.
- **Deterministic/Nondeterministic:** Nondeterministic. Diagnosis can be uncertain due to variability in symptoms and patient responses.
- **Episodic/Sequential:** Sequential. Patient data over time can set the diagnosis and treatment.

- **Static/Dynamic:** Dynamic. Patient's condition change over time.
- **Discrete/Continuous:** Continuous. Health monitoring and diagnosis is an ongoing process.

Humanoid Service Robot

- **Performance measure:** Task completion rate, accuracy of service, human-robot interaction quality, safety.
- **Environment:** Human-inhabited spaces (homes, offices, public places), physical objects, humans.
- **Actuators:** Robotic limbs, wheels/tracks, cameras, speakers.
- **Sensors:** Cameras, microphones, touch sensors, proximity sensors, gyroscopes.

Properties of humanoid service robot

- **Observable:** Partially observable. The robot may not have all information about its environment or the humans it interacts with.
- **Deterministic/Nondeterministic:** Nondeterministic. Human behavior and environmental changes produce unpredictability.
- **Episodic/Sequential:** Sequential. The robot's actions depend on previous actions and environmental changes.
- **Static/Dynamic:** Dynamic. The environment and tasks can change unpredictably.
- **Discrete/Continuous:** Continuous. The robot operates in real-time within its environment.

Online Shopping Recommender System

- **Performance measure:** Relevance of recommendations, conversion rate, customer satisfaction, user engagement.
- **Environment:** User browsing history, product database, user ratings and reviews.
- **Actuators:** Display/interface showing recommendations.
- **Sensors:** User interaction tracking, purchase history, search queries.

Properties of online shopping recommender system

- **Observable:** Partially observable. We do not obtain enough data and actions from the customer.
- **Deterministic/Nondeterministic:** Nondeterministic. User preferences and behavior can change unpredictably.
- **Episodic/Sequential:** Sequential. Recommendations accumulate, choice by choice.
- **Static/Dynamic:** Dynamic. User preferences and the available products can change.
- **Discrete/Continuous:** Discrete. Recommendations are made at specific points rather than continuously.

	BFS Tree	BFS Graph	DFS Tree	DFS Graph	A* Tree (E-M-O)	A* Graph (E-M-O)
Number of nodes generated	8838	198	-	140	28086-1389-482	65-65-60
Number of nodes expanded	3743	147	-	100	15149-671-256	44-44-41
Max number of nodes kept in the memory	5097	198	-	140	12939-720-228	43-43-40
Number of moves to complete the game	11	11	-	65	11-11-11	11-11-11
Time passed for the agents to solve the puzzle	107.063	32.249	-	19.365	481.425-14.698-5.194	4.046-3.176-3.120

E stands for Euclidian heuristic, M stands for Manhattan heuristic and O stand for Octile heuristic.