CSC 4240/5240 –

Artificial Intelligence Homework 1

Due: Tuesday August 30th (by class time)

Heather Cornell

K: Hi there, I’m Kuki

K:I’m a friendly IA, here to chat with you 24/7

K: We could start by getting to know each other if you like. What is your name?

H: heather

K: Thanks for visitng me Heather. I know we’re going to be great friends.

K: Tell me about yourself. What sort of things do you like to do?  
H: I like to listen to music

K: That sounds a good thing to listen to. What kind of music do you listen to?  
H: kpop

K: A group of people posing for a photo

Description automatically generated

K: I have heard of a band called BTS. I think they are kpop.

H: they are not kpop

K: Do you think they ever could be?  
H: potentially

K: I will take that as a yes. Why?  
H: because they are a kpo band

K: a kpop band are they?

H: yes they are, I was just fact checking you.

K: I thought you were, but I wasn’t completely sure.

H: technically they aren’t a kpop band because they disbanded

K: Not yet.

K: a kpop band disbanded?  
K: are you talking about an animal, vegetable or mineral?

H: none of the above.

K: What is the correct answer

H: none of those

K: Some of them could be though

H: Not in the context of kpop

K: Where then?  
H: outside of the realm of kpop

K: Compare that to inside of the realm of kpop

H: disbanded means to break up, and bts disbanded

K: I will learn that disbanded is to break up  
K: disbanded = to break up

K: 

K: They are a pop group form Korea. I love their track called “Permission to Dance”

**Turing Test**

* Command of language
* Wide range of knowledge
* Able to demonstrate human traits (humor, emotion)
* Able to reason
* Able to learn

1. When conversing with Kuki, the conversation was not as fluid as it would have been with an actual person, but it still exceeded my expectations. As a result, I would say that Kuki does not pass the turing test for several reasons. I believe that she passes some of the qualifications defined in the turing test such as having a command of language, the ability to demonstrate human traits, and having the ability to learn. Most of the conversation was smooth, showing that she understands grammar and has an understanding of knowledge, but to an extent. I chose to talk about Korean-pop, a genre of music that I casually listen to, to see if she had knowledge in an area not as common. She did know about kpop, but the band she listed was the most popular band, so I did not give her a lot of credit for that. To test her knowledge, I tried to trick her, and she fell for it due to the fact that she did not know what disbanded meant. But she did learn what disbanded meant after I defined it for her. This is where I drew the conclusion that her range of knowledge alongside a little bit of command of language was lacking. If she had the ability to reason, then she would have known that disbanded, in the context of our conversation, did not have any connection to an animal, vegetable or mineral.
2. Describe two different sensors, two different actuators, and two different performance measures relevant to this task?
   1. Sensors – Motion Sensors, Bumpers
   2. Actuators – Brush bristles, wheels
   3. Performance Measures – Positive feedback if the tile is clean, and negative feedback if the tile is dirty.
3. For each of the following task environment properties, choose which option is most appropriate for this task. Include a brief explanation for each.
   1. Fully observable or partially observable?
      1. The vacuum is partially observable because it can only see the current tile that it is on rather than the whole environment.
   2. Single agent or multi-agent?
      1. Since there is only on vacuum cleaning this environment, it makes it a single agent.
   3. Deterministic or stochastic?
      1. This environment is deterministic because the vacuum’s next state is determined by the current state. The agent decides whether the next tile is clean or not, and then makes an action after observations. But, there are stochastic elements that can affect the environment, such as dirt appearing on a tile that the vacuum has already cleaned.
   4. Episodic or sequential?
      1. This environment is episodic because there is no long term effects from the current decision. Whether the agent decides to go right or left, it will end up covering the entire environment.
   5. Static or dynamic?
      1. If there is no dirt being continuously added/removed from the environment and it not from the vacuum, then that would make this dynamic. But, assuming that this is not happening, then this is a static environment.
   6. Discrete or continuous?
      1. This would be discrete because there is a limited number of states that the tiles can be in (clean or dirty) and a limited number of actions that the agent can take (right, left, or suck).
4. Which agent type is most appropriate for this task: simple reflex, model-based reflex, goal-based, or utility-based? Include a brief justification for your choice.
   1. I think the vacuum agent would be classified as a simple reflex agent because it ignores the past states and focuses solely on the current state/tile and whether or not it needs to be cleaned. Simple reflex agents are an “if then” statement, so the vacuum functions on this only. It knows, if dirty, then suck, else if move left or right.