Fall 2020 Mid-Term Assignment
HUMAN COMPUTER INTERACTION

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BSSE *(6th Semester)*

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(Lecturure)

Question No: 01

a) What is the main aim of the Don Norman's Book (The Design of Everyday things)?
Ans:

The Design of Everyday Things by Don Norman (revised edition, 2013) is a book that considers the depth and range of interactions between people and the real world. This is ostensibly a book about design, but to suggest that this book should only be read by designers would be a mistake; this book should be read by anyone interested in learning more about human cognition and behavior.

b) Explain Deductive and Abductive reasoning with examples.
Ans:

Deductive reasoning:
- Deductive reasoning is a "top-down logic" meaning it starts with a general premise e.g. "All men are mortal", and leads toward a specific conclusion e.g. "Socrates is mortal" (Deductive reasoning goes from the general to the specific)
- "Deductive" means the conclusion is "drawn from" the general principle
- In a deductive argument the conclusion is already contained within the premises, and always follows directly from the premises, without deviating or abstracting in any way. There is nothing in the conclusion of a deductive argument that is not contained within the premises
- Deductive arguments aim towards certainty. In a deductive argument the conclusion is definitely true if the premises are true, and they necessarily lead to the conclusion

Example:
- All dogs can fly
- Snoopy is a dog
- Snoopy can fly

Note: Obviously dogs can't fly, however if the premises were true that all dogs could fly, and that Snoopy was a dog, then it would necessarily lead to the conclusion that Snoopy could fly

Abductive reasoning:
- Abductive reasoning is "inference to the best explanation", it's simply taking an educated guess at the "most likely" explanation for an observation, or set of observations, given the limited data and evidence you have
- If you have conflicting evidence, or multiple competing hypothesis, you go with the simplest and most likely explanation, the one with the best evidence
- Abductive reasoning, like inductive reasoning, isn't perfect and doesn't guarantee that the conclusion is correct even if the premises are correct, however it's very useful because we're always working with limited, data, evidence, information etc.

Example:
- You tell a secret to only one person
- The next day everyone knows your secret
- That person told other people your secret

Note: It could be that other people somehow guessed your secret, however it's more likely that that person betrayed your trust and told other people your secret

Question No: 02

Analyze the following scenario and write down seven stages of action for given particular scenario for solution. Scenario is: **Suppose I want to go to University, but the tyre of my car got punctured. Now I have to repair it.**

You are required to write the seven stages of Gulf of Execution and Evaluation to solve the scenario.

Ans:

To solve the given scenario first we have to identify and then apply the seven stages of Gulf of Execution and Evaluation which are as follow:

1. In the first stage we have to establish the goal. The goal here is that I have to reach to the university. But the tire of my car has got punctured so I have to repair the tire of my car hence the goal has established.
2. In the this second stage I have to make intention for doing the task to that what would I do to make my goal satisfy. So I would have to repair my car's tyre this will satisfy my goal to reach my university.
3. The third stage is for specifying an action that what I have to do to achieve my goal my intentions. I need to go to tyre shop to repair my car's tyre to complete my requirements in my goal.
4. In this fourth stage, I have to execute the set of actions to achieve my goals. I would repair my car to reach the university.
5. In fifth stage we have to perceive the state of the system I have to use my senses to gather the information so when I repair my car so it will sense that my repaired car would be able to reach to the university.
6. In the second last stage we will interrupt the state of system. That what has changed? So the punctured tyre of my car has been repaired and now it is able to work properly and reach to the university.
7. The last stage is to evaluate system state with respect to goal. I means did I have achieved my goal? So my car now reach to the university without any worries. So I achieved my goal.

Question No: 03

a) Differentiate slip and mistake.

Ans:

Slips:

A slip occurs when a person intends to do one action and ends up doing something else. With a slip, the action performed is not the same as the action that was intended.

Mistake:

A mistake occurs when the wrong goal is established or the wrong plan is formed. From that point on, even if the actions are executed properly, they are part of the error, because the actions themselves are inappropriate — they are part of the wrong plan.

b) Explain self-perception and object perception.

Ans:

Self-perception:

Self-perception means and includes how we perceive our self. One's self perception is defined by their selfconcept, self-knowledge, self-esteem and social self. Self-concept forms a major part of self-perception.The Perceptions of Self states that we all are not really so self-aware. We are sometimes ignorant of our own nature. It is a fact that people are not particularly good judges of their own natures (self-ignorance). introduced the name self-perception for the processes of selfobservation and interpretations. He puts that we are in the same position as an outside observer of ourselves, and we must infer our own

psychological states from our own actions. Our knowledge of ourselves is exactly like our knowledge of others, and hence our knowledge of ourselves is subject to all the same problems of inattention, distraction, prejudice and self-perception serving misinterpretations.

Object perception:

Object perception is the process in which visual input is assigned a meaningful interpretation that is available to perceptual awareness. It is fundamental to our ability to interpret and act in the world. Object perception is thought to occur though computations across a hierarchy of processing stages in visual cortex, named the ventral visual pathway. This pathway begins in the primary visual cortex, area V1 in the occipital lobe, and ascends to regions in lateral occipital cortex and ventral occipito-temporal cortex. Damage (such as lesions, stroke, disease) to higher level visual areas in this pathway leads to specific deficits in object perception, such as the inability to recognize objects (object agnosia) and/or inability to recognize faces (prosopagnosia) while not affecting other visual abilities, such as determining the motion of objects, or their contrast. As such, higher level regions in the ventral stream are thought to be necessary for conscious object perception.

Question No: 04

a) Write the steps involved in perceptual process.
Ans:

Steps are:
- The Environmental Stimulus
- The Attended Stimulus
- The Image on the Retina
- Transduction
- Neural Processing
- Perception
- Recognition
- Action

b) Differentiate between perception and recognition.
Ans:

Perception

Here, we actually perceive the stimulus object in the environment. It is at this point that we become consciously aware of the stimulus.

It basically means the way in which something is regarded, understood, or interpreted. Since, images are perceived by humans, therefore it varies from human to human.

Let's consider our example, in which we imagined that you were out for a morning jog in the park. At the perception stage, you have become aware of that there is something out on the pond to perceive.

Recognition

Perception doesn't just involve becoming consciously aware of the stimuli. It is also necessary for our brain to categorize and interpret what it is we are sensing.

Our ability to interpret and give meaning to the object is the next step, known as recognition.

In image processing object recognition is a method which helps to identify objects which are present in an image. It categorizes the objects, e.g. a dog present in an image can be recognized as a dog only.

It is at the recognition stage of the perceptual process that you realize that there is a duck floating on the water.

Question No: 05

a) *A graphic designer, wants to design a 3d shape using Adobe Illustrator, he select a shape, apply some gradient on it and then apply drop shadow effect.*
In the given scenario in the light of interaction identify the Goal, Problem domain and the task.
Ans:

In the given scenario the Goal, Problem domain and task are as follow:

Goal :- *design a 3d shape using Adobe Illustrator*

Problem Domain:- *he select a shape*

Task :- *apply some gradient on it and then apply drop shadow effect.*

b) **Explain Gulf of Execution and Gulf of Evaluation.**
Ans:

Gulf of Execution
Gulf of execution is the difference between the user's formulation of the actions to reach the goal and the actions allowed by the system. If the action allowed by the system correspond to those intended by the user, the interaction will effective. The interface should therefore aim to reduce this gulf of execution.

Gulf of Evaluation
The gulf of evaluation is the distance between the physical presentation of the system state and the expectation of the user. If the user can readily evaluate the presentation in terms of his goal, the gulf of evaluation is small. The more effort that is required on the part of the user to interpret the presentation, the less effective the interaction.

Thank you!