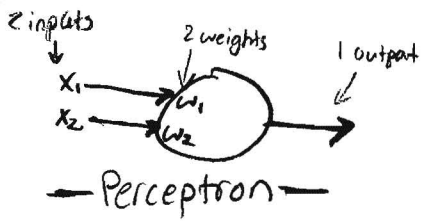
93

1. Briefly, and concisely, explain what a script is and describe the basic components of a script.

A script was created to act like a movie script where actions are taking place and the whole thing is diveded into scenes. You can have situational, instrumental, or personal scripts where each of the three involves something and its environment that can either be expressed publicly to the world or nobody can know about it (like a Personal script). The script is built with actions, scenes, props, players, and locations/enviornments/situations (like either a fastfood restaurant, or a nice fancy restaurant etc) * (seperate scripts for each) * where they are all components of the scripts that are used to interact with each other.

, 4

every condition
needs?



Perceptron

2. Describe, completely, the process necessary to train/teach a single perceptron.

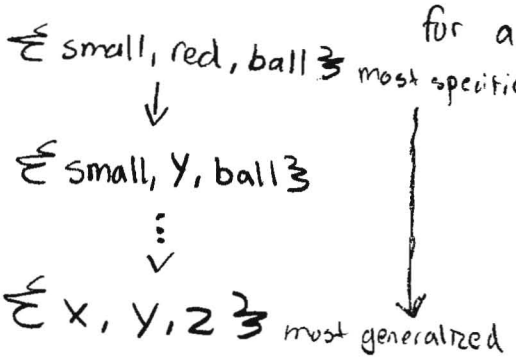
A single perceptron has two inputs (x_1 and x_2), each with a weight (w_1 and w_1 are randomly assigned), and with only 1 output. To train it we use a STEP function that will calculate the result of output and we compare it to our desired output. For the step function to work we set up a t value that the STEP function uses to determine the different type of outputs. With each weight we multiply it with their paired input values and send the result to the STEP function. If its correct then we move on, else we must factor in the error rate and calculate a new weight for what went wrong. Then we loop back around following this process of checking for weights to be correct and once every combination of X_1 and x_2 succeed with the w_1 and w_2 then the perceptron has successfully been taught how to work. (This is how we taught the perceptron in class to do an OR gate with inputs 00, 01, 10, And 11 and in this example on TD3; $x_1 = 1$ and $x_2 = 0$ we had the weights at something like $w_1 = .2$ and $w_2 = .4$ so $1(-.2) + 0(.4) = -2$ and STEP$(-2) = 0$ because if our t was less than or equal to 0 then output was 0, so we had to recalculate the weight because output should be 1 but STEP$(-2) = 0$. We change x_1 weight and continue until everything passes with the new weight. etc)

3. Briefly, and concisely, explain what the Frame problem is in the context of planning systems.

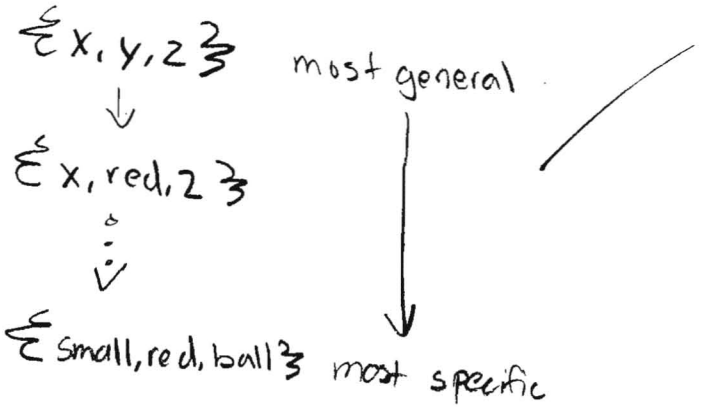
Frame Problem/Frame Axioms have a problem that can be fixed by the notion of Strips (≡) with the Decision Triangle which retains all post and preconditions for an action to occur. This is where the frame problem comes into play because they cannot check the pre- and post-conditions of an action and yet alone figure out how the resolved the problem, so therefore frames cannot backwards propagate to obtain its solution path. So in a planning system you must know your pre/post conditions to know the reasons of your actions and that is why there is a frame problem, and you can fix these problems with STRIPS because they can backwards propagate and they check preconditions and give the results of its actions as post-conditions.

4. Symbol based learning systems use *generalization* and *specialization* operations on symbolic expressions while processing training data. Explain both operations and give an example of each.

Generalization - goes from most specific to general, and finds the most generalized form that will work for all positive instances.



Specialization - takes the most general and attempts to locate the most specific thing that works for all the positive instances



5. Indicate, in the space provided, if the following statements are true or false. If false, briefly explain why.

F A frame, by itself, has no temporal aspect. → (it uses prototypes which are stored in memory like they do in the brain) ~~It is~~ a snapshot

F The ID3 algorithm builds a decision tree from ~~the leaf up~~ the root on down

X Every living person has a complete and detailed Opera script.

T Rule based production systems that use data driven reasoning cannot adequately respond to the **why** query.

T *Inductive bias* is introduced when criteria is used to constrain a concept base.

/3

6. Fill in the blanks with the appropriate answer from the choices given.

i) A Semantic network represents knowledge as a graph.
- frame
- generalization
- semantic network
- perceptron

ii) Curtis will ***never*** pass this class.
- Tom
- Dick
- Harry
- Curtis

iii) Replacing constants with variables is a form of generalization
- elimination
- generalization
- specialization
- reinforcement

iv) If concept p is more general than concept q, then p covers q.
- replaces
- covers
- entropies
- biases

v) ~~Reinforcement~~ uses both specific-to-general and general-to-specific approaches to learning.
- Candidate elimination
- Backpropagation
- Reinforcement — One of you
- Planning

/3