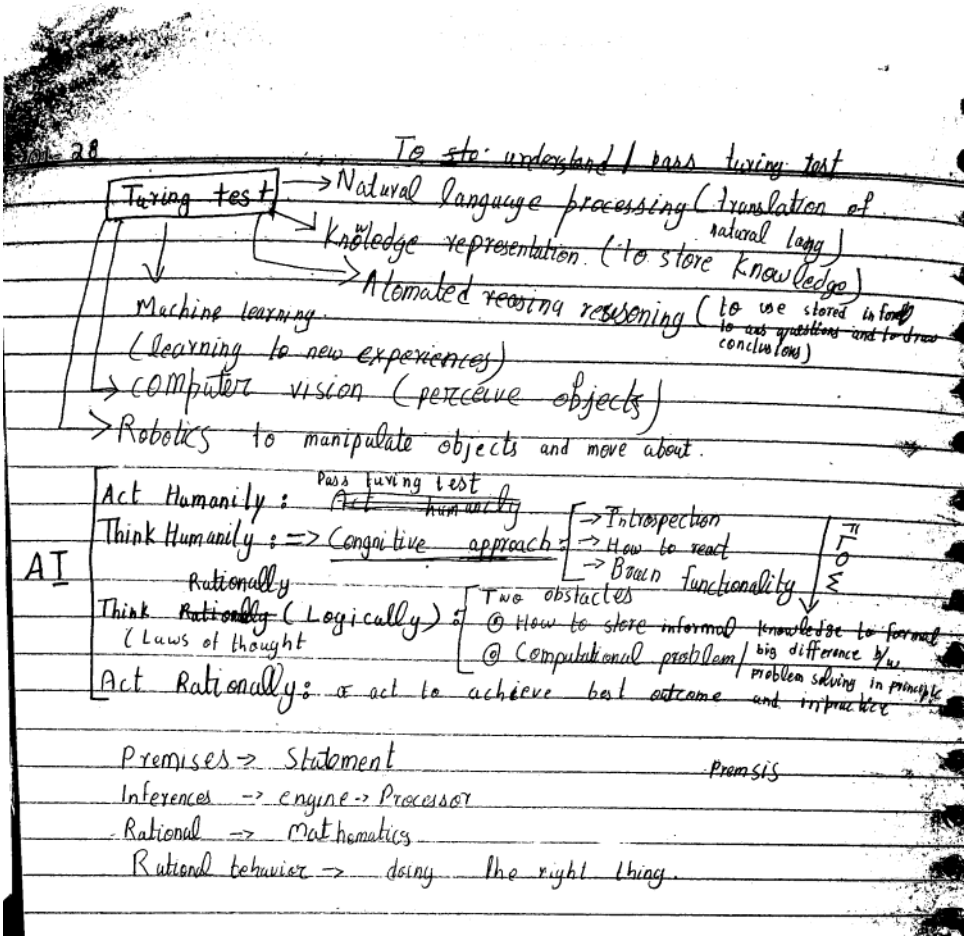
01/28 Lecture 1

Friday, February 8, 2019 1:06 AM



Intelligence:
The ability to acquire and apply knowledge and skills

Think Humanly
The existing new efforts to make computers think, machines with minds, in full and literal sense

Think Rationally

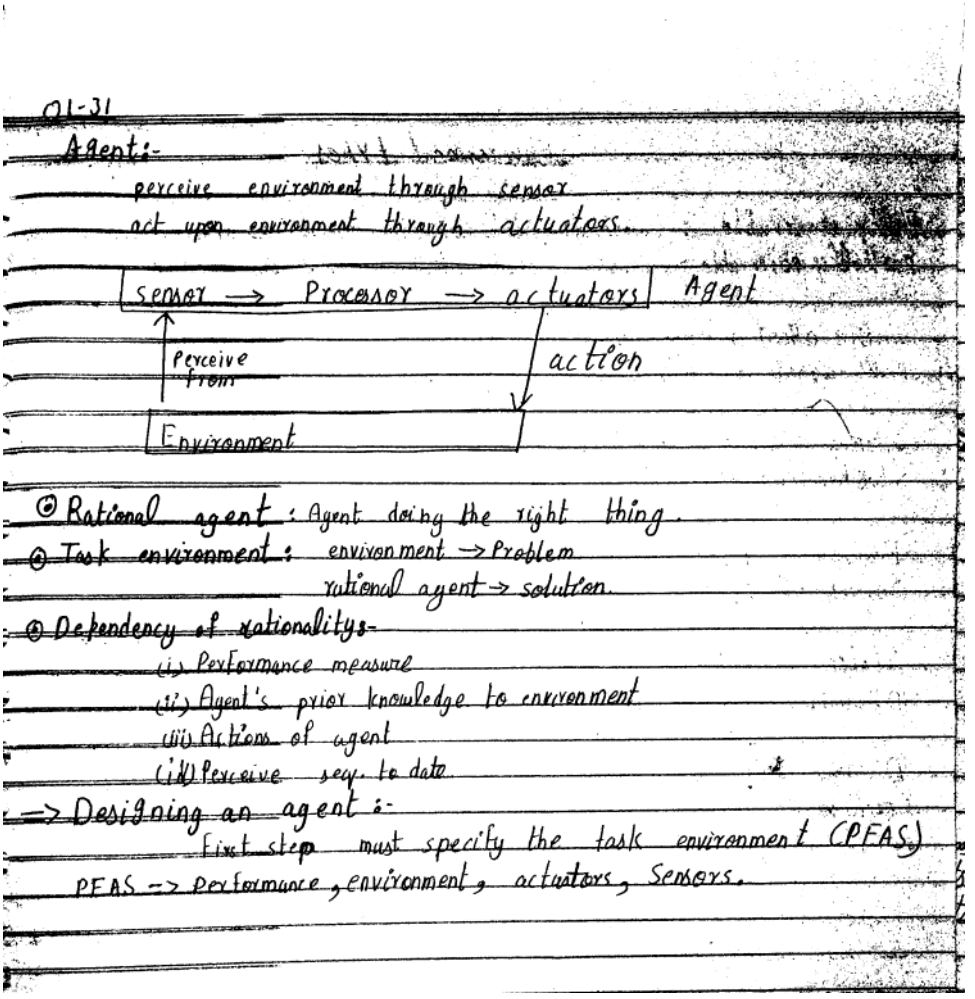
The study of the computation that make it possible to perceive, reason and act

Acting Humanly
Machine performing activities that require intelligence when performed by people

Acting Rationally
Computational Intelligence is the study of design of intelligent agents

01/31 Lecture 2

Friday, February 8, 2019 1:07 AM

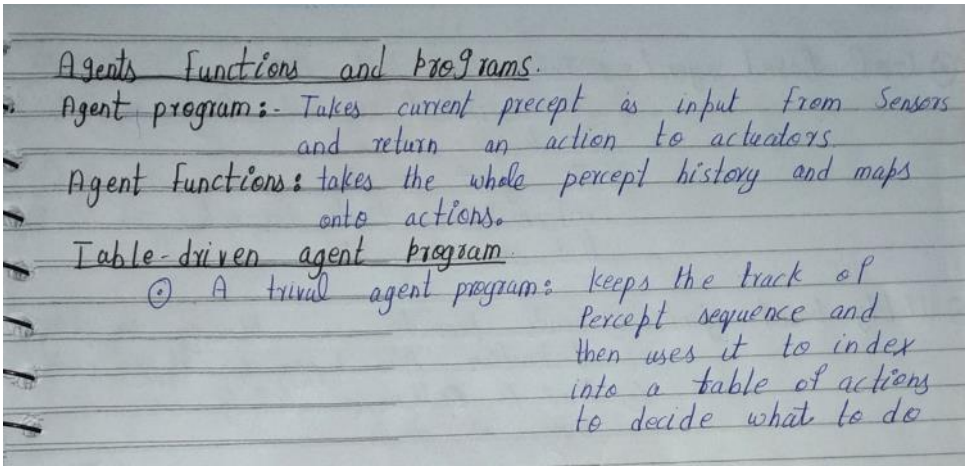


A **Human Agent** has **sensory organs** such as eyes, ears, nose, tongue, skin and **Actuators** hands, eyes, legs, mouth

A **Robotic Agent** has sensors such as IR Sensor, Camera and various Motors as Actuators.

A **Software Agent** has sensors Keystrokes, file Contents, received network packages and Screen, output files, sending network packages as Actuators

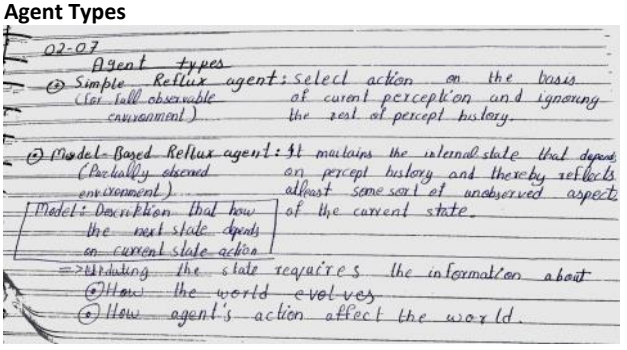
Performance Measure of Agent — It is the criteria, which determines how successful an agent is.
Behavior of Agent — It is the action that agent performs after any given sequence of percepts.
Percept — It is agent's perceptual inputs at a given instance.
Percept Sequence — It is the history of all that an agent has perceived till date.
Agent Function — It is a map from the precept sequence to an action.

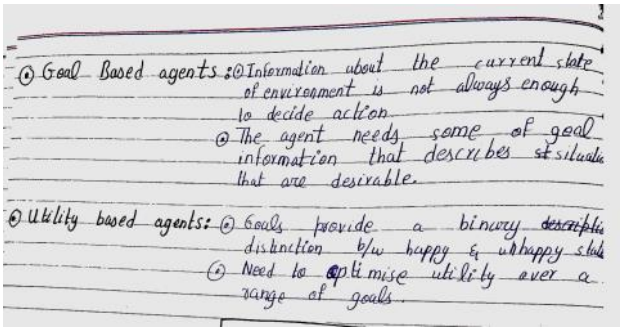

Agents Functions and programs.
Agent program:- Takes current precept as input from Sensors and return an action to actuators
Agent Functions: takes the whole percept history and maps onto actions.
Table-driven agent program
⊙ A trivial agent program: keeps the track of Percept sequence and then uses it to index into a table of actions to decide what to do

02/07 Lecture 3

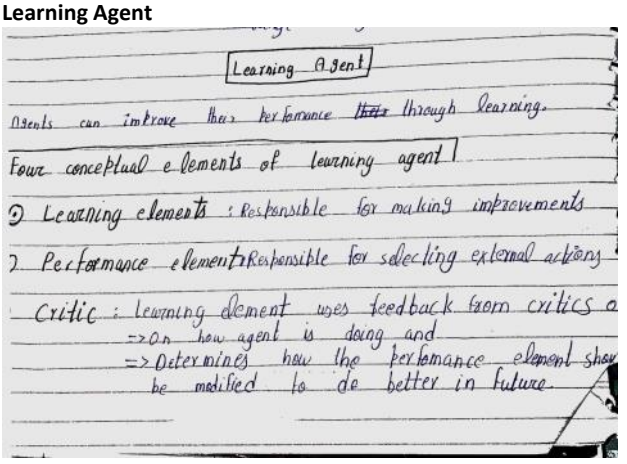
Friday, February 8, 2019 1:30 AM

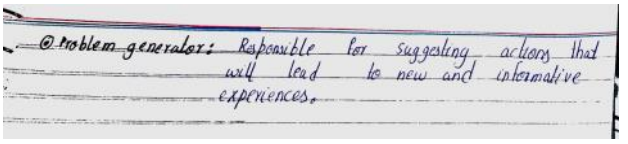
Agent Types


02-07
Agent types
① Simple Reflux agent: Select action on the basis of curent perception and ignoring the rest of percept history.
(for full observable environment)
② Model-Based Reflux agent: It maintains the internal state that depends on percept history and thereby reflects atleast some sort of unobserved aspects of the current state.
(Partially observed environment)
[Model: Description that how the next state depends on current state action]
=> Updating the state requires the information about
① How the world evolves
② How agent's action affect the world.


③ Goal Based agents: ① Information about the current state of environment is not always enough to decide action.
② The agent needs some of goal information that describes situations that are desirable.
④ Utility based agents: ① Goals provide a binary distinction b/w happy & unhappy state
② Need to optimise utility over a range of goals.

Learning Agent


Learning Agent
Agents can improve their performance through learning.
Four conceptual elements of learning agent
① Learning elements: Responsible for making improvements
② Performance element: Responsible for selecting external actions
③ Critic: learning element uses feedback from critics on how agent is doing and
=> Determines how the performance element should be modified to do better in future.


④ Problem generator: Responsible for suggesting actions that will lead to new and informative experiences.