COVID – 19 (ONLINE EXAMINATION)

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देव संस्कृति विश्वविद्यालय

शान्तिकुन्ज, हरिद्वार

आन्तरिक मूल्यांकन परीक्षा – INTERNAL EVALUATION TEST

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Pranav

परीक्षार्थी के हस्ताक्षर
Signature of student's

परीक्षक के हस्ताक्षर
Signature of Examiner

Production System:-

Production system or production rule system is a computer program typically used to provide some form of Artificial intelligence, which consists primarily of a set of rules about behavior but it also includes the mechanism necessary to follow those rules as the system responds to states of the world.

Features of Production system in Artificial Intelligence:-

The main features of the production system include!

1:- Simplicity:- This structure provides simplicity in knowledge representation.

2:- Modularity:- This means the production rule code the knowledge available in discrete pieces.

3:- Modifiability:- This means the facility for modifying rules.

4:- Knowledge-intensive:- The knowledge base of the production system stores pure knowledge.

Advantages of Production System:-

→ Provides excellent tools for structuring AI program.
→ Separation of knowledge and control - Recognises Act Cycle.
→ Provides opportunities for heuristic control of the search
→ Quite helpful in a real-time environment and applications.
→ A good way to model the state-driven nature of intelligent machine.

Disadvantage of Production System:-

- It is very difficult to analyze the flow of control within a production system.
- It describes the operations that can be performed in a search for a solution in the problem.
- There is an absence of learning due to a rule based production system that does not store the results of the problem for future use.

Ans:- 2 ANN :-

An artificial neural network (ANN) is the piece of a computing system designed to simulate the way the human brain analyzes and processes information. It is the foundation of artificial intelligence (AI) and solves problem that would prove impossible or difficult by human or statistical standards.

ANNs have self-learning capabilities that enable them to produce better results as more data becomes availables.

* Key Takeaways:-
→ An artificial neural network (ANN) is the component of artificial intelligence that is ment to simulate the functioning of a human brain.
→ Backpropagation is the set of learning rules used to guide artificial neural network.
→ ANN are built like the human brain, with ~~neuron~~ nodes inter connected like a web. The human brain has hundreds of billions of cell called ~~neu~~ neurons.

Areas of Application:-

→ Speech Recognition
→ Character Recognition
→ Signature Verification Application
→ Human Face Recognition

Long Answer :- 3

Fuzzy Logic :-

The term fuzzy refers to things which are not clear or are vague. In the real world many times we encounter a situation when can't determine whether the state is true or false, then fuzzy logic provides a very valuable flexibility for reasoning. In this way, we can consider the inaccuracies and uncertainties of any situation.

→ Fuzzy logic is a method of reasoning that resembles human reasoning. This approach is similar to how human perform decision making. And it involves all intermediate possibilities between YES and NO.

→ The fuzzy logic works on the levels of possibilities of input to achive a definite output. Now talking about the implementation of this logic

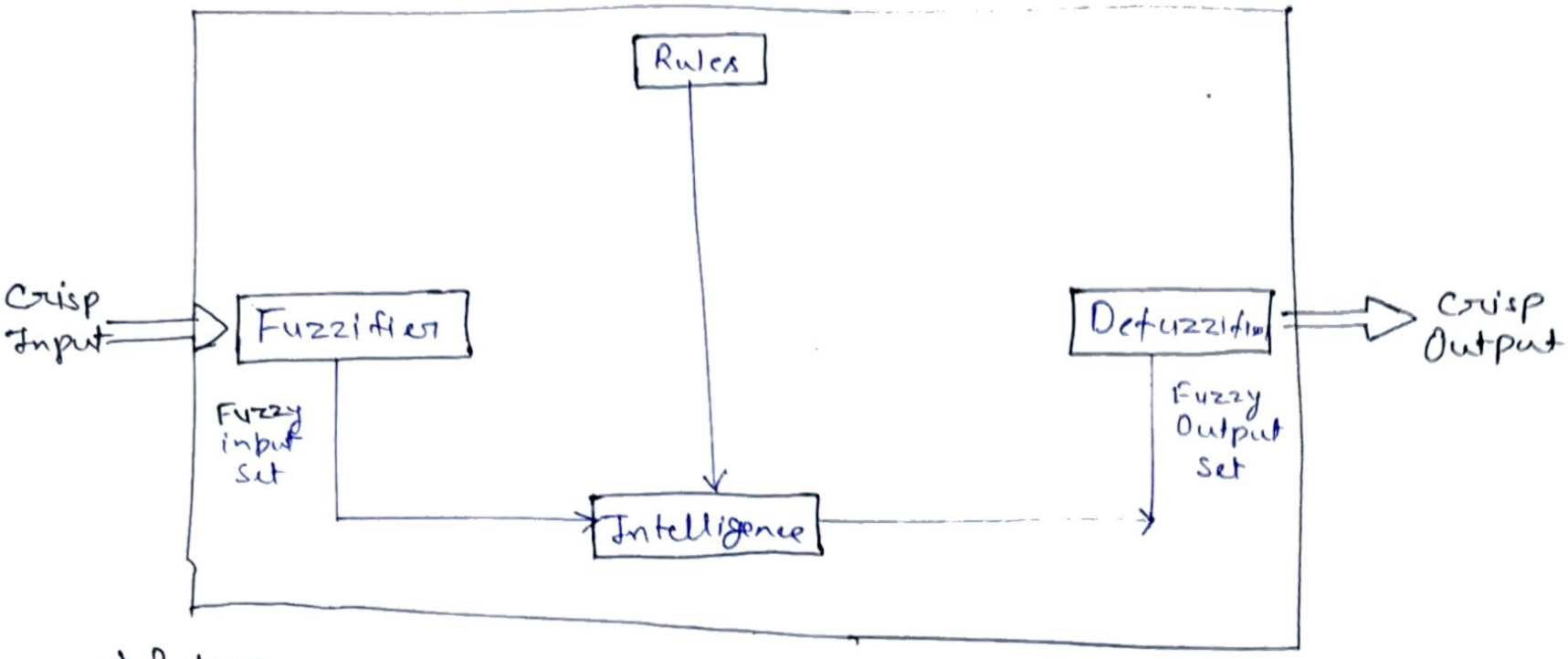
- It can be implemented is systems with different sizes and capabilities as micro-controllers, large networked or work station-based system.
- Also, it can be implemented in hardware, software or a combination of both.

Why do we use Fuzzy logic:-

- It controls machines and consumer products.
- If not accurate reasoning, it at least provides acceptable reasoning.
- This helps in dealing with the uncertainty in engineering.

Fuzzy Logic Architecture:-

The fuzzy logic architecture consists of four main parts:-



→ Rules:-

→ Fuzzification:-

→ Interence Engine

→ Defuzzification

Example :-

The design of a fuzzy logic system starts with a set of membership function for each input and a set for each outputs. A set of rules is then applied to the membership functions to yield a crisp output values.

Step 1:-

Here, Temperature is the input and Fan speed is the output. You have to create a set of membership functions for each input. A membership functions is simply a graphical representation of the fuzzy variables sets. For this examples, we will use three fuzzy sets, Cold, Warm and Hot. We will then create a membership function for each of three sets of temperature:.

Step 2:-

In this setep, we will use three fuzzy sets for the output, Slow, Medium and Fast. A set of functions is created for each output sets just as for the input sets.

Step 3:-

Now that we have our membership functions defined, we can create the rules that will define how the membership functions will be applied to the final system. We will create three rules for this system.

- If Hot then Fast
- If Warm the Medium
- And, If cold then Slow