

DRONACHARYA COLLEGE OF ENGINEERING

KHENTAWAS, FARRUKHNAGAR, GURGAON, HR

Department of Computer Science & Engineering

For Class: VI CSIT/IT

Academic Session: (MAY- AUG 2021)

Lecture Plan with Assignment questions

Subject with code: Soft Computing (PEC-IT-304G)

Name of Faculty with Designation : Mr. Amar Saraswat, Assistant Professor

Month	Date	Day	Sem-Class	Unit	Topic/Chapter covered	Write Lecture Wise Questions
May	5/18/2021	Tuesday	VI CSIT/IT	I	Evolution of Computing: Soft Computing Constituents	Ques 1: What is Soft Computing? Explain its importance? Ques 2: Explain the application areas of Soft Computing.
May	5/21/2021	Friday	VI CSIT/IT	I	From Conventional AI to Computational Intelligence: Machine Learning Basics	Ques: Outline the differences between hard computing and soft computing .
May	5/25/2021	Tuesday	VI CSIT/IT	II	Fuzzy Sets, Operations on Fuzzy Sets,	Ques 1: Define fuzzy numbers, and write arithmetic operations on Fuzzy numbers. Ques 2: Consider two fuzzy sets X and Y with the following membership functions: $X = \{(x1/0.4), (x2/0.7), (x3/0.8), (x4/1)\}$ $Y = \{(x1/0.3), (x2/0.6), (x3/0.5), (x4/0.9)\}$ Calculate: $X \cup Y, X \cap Y, X - Y, X + Y, X * Y$ Ques 3: Define lattice of fuzzy numbers, Explain how to find MIN and MAX? Ques 4: Name and explain different fuzzy membership functions with a diagram. Ques 5: What is fuzzification. Illustrate the procedure with help of example. Ques 6: Consider Two fuzzy sets $A1=0.2/x1+0.9/x2$ and $A2=0.3/y1+0.5/y2+1/y3$. Determine the $A1-A2$.
May	5/28/2021	Friday	VI CSIT/IT	II	Fuzzy Relations, Membership Functions: Fuzzy Rules and Fuzzy Reasoning	Ques 1: Define Fuzzy logic with example. Write comparison between fuzzy logic and crisp logic. Ques 2: Compare classical and fuzzy sets Ques 3: Define fuzzy equation with its properties. Ques 4: Define lattices and discuss its properties. Ques 5: Define fuzzy sets, vagueness and uncertainty. Ques 6: Define and explain concept of Fuzzy subsets and membership Function. Ques 7: Draw and explain concept of fuzzy system.

June	6/1/2021	Tuesday	VI CSIT/IT	II	Fuzzy Inference Systems, Fuzzy Expert Systems, Fuzzy Decision Making	<p>Ques 1: Define and explain linguistic variables with example.</p> <p>Ques 2: Write useful properties of arithmetic operations on fuzzy intervals</p> <p>Ques 3: Enlist various operation on fuzzy sets with their syntax.</p> <p>Ques 4: Define and explain fuzzification and defuzzification.</p> <p>Ques 5: Define and explain fuzzy rules with examples.</p> <p>Ques 6: Describe limitations of fuzzy systems.</p> <p>Ques 7: Consider some fuzzy sets and prove the distributive law, associative law.</p> <p>Ques 8: Explain various applications of fuzzy logic.</p> <p>Ques 9: Define and explain alpha cut by considering a fuzzy set.</p> <p>Ques 10: Write and explain characteristics of fuzzy sets.</p>
June	6/4/2021	Friday	VI CSIT/IT	III	Machine Learning Using Neural Network	<p>Ques 1: Explain why Neural Network is used as an approach to Machine Learning</p> <p>Ques 2: Explain the following Neural Networks:</p> <ol style="list-style-type: none"> i. Deep Neural Network ii. Convolutional Neural Networks
June	6/8/2021	Tuesday	VI CSIT/IT	III	Machine Learning Using Adaptive Networks	<p>Ques 1: Explain the various Techniques used by adaptive neural networks to adapt?</p> <p>Ques 2: Explain the following terms in detail:</p> <ol style="list-style-type: none"> 1. Functional Adaptation 2. Parameter Adaptation 3. Structural Adaptation
June	6/11/2021	Friday	VI CSIT/IT	III	Machine Learning Using Feed forward Networks	<p>Ques 1: Explain how feedforward neural network works.</p> <p>Ques 2. Write short notes on:</p> <ol style="list-style-type: none"> 1. Gradient Descent 2. Backpropagation 3. Loss Calculation
June	6/15/2021	Tuesday	VI CSIT/IT	III	Supervised Learning Neural Networks	<p>Ques 1: Explain the basic elements of Perceptron</p> <p>Ques 2: Explain Adaline and Madaline, with the help of a suitable example.</p>
June	6/18/2021	Friday	VI CSIT/IT	III	Radial Basis Function Networks	<p>Ques 1: Explain Radial-basis Function Networks in detail.</p>
June	6/29/2021	Tuesday	VI CSIT/IT	III	Reinforcement Learning	<p>Ques 1: Explain the various types of reinforcement learning in detail?</p> <p>Ques 2: Explain the difference between supervised learning and reinforcement learning.</p>

July	7/2/2021	Friday	VI CSIT/IT	III	Unsupervised Learning Neural Networks	Ques 1. What is Unsupervised Learning? Explain the various types of Unsupervised Learning. Ques 2: Explain the following in detail: 1. Clustering 2. Association
July	7/6/2021	Tuesday	VI CSIT/IT	III	Adaptive Resonance architectures	Ques 1 : Explain the various advantages of Adaptive Resonance Theory (ART) Ques 2: Explain the role of F1 Layer, F2 Later and Reset Module.
July	7/9/2021	Friday	VI CSIT/IT	III	Advances in Neural networks	Ques 1: Explain the various limitations of Neural Networks Ques 2: Enlist the applications of Neural Networks
July	7/13/2021	Tuesday	VI CSIT/IT	IV	Introduction to Genetic Algorithms (GA), Applications of GA in Machine Learning	Ques1: What is the need of Genetic Algorithm. Explain with the help of a flow chart. Ques 2: How do we evaluate fitness function, explain with the help of suitable example
July	7/16/2021	Friday	VI CSIT/IT	IV	Machine Learning Approach to Knowledge Acquisition	Ques 1: Explain Induction Driven Knowledge Acquisition
July	7/20/2021	Tuesday	VI CSIT/IT	IV	Study of neural network toolbox	Practice Examples
July	7/23/2021	Friday	VI CSIT/IT	IV	Study of fuzzy logic toolbox	Practice Examples
July	7/27/2021	Tuesday	VI CSIT/IT	IV	Simple implementation of Artificial Neural Network	Practice Examples
August	8/10/2021	Tuesday	VI CSIT/IT	IV	Simple implementation of Fuzzy Logic	Practice Examples

