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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E. **Semester: VI**
Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**
Course Code: 22AM6PCDEL **Max Marks: 100**
Course: Deep Learning **Date: 12.07.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Solve the XOR problem through feed forward network. Detail the solutions with necessary equation.	*CO3*	*PO3*	**10**
	b)		What is the significance of Early Stopping? Rewrite the early stopping meta-algorithm for determining the best amount of time to train.	*CO2*	*PO2*	**10**
			OR			
2	a)		Elaborate on how the choice of cost function is an important aspect of designing a Deep Neural Network.	*CO2*	*PO2*	**10**
	b)		Explain the strategy of combining several models to reduce generalization error.	*CO2*	*PO2*	**10**
			UNIT - II			
3	a)		Compute the gradient in Recurrent Neural Network (RNN) and detail the process with supportive mathematical derivatives.	*CO1*	*PO4*	**10**
	b)		Explain how Bidirectional RNNs help in prediction of output that depends on whole of the input.	*CO2*	*PO2*	**10**
			UNIT - III			
4	a)		Elaborate on the different layers of a Convolutional Neural Network (CNN) with necessary diagram and derivatives.	*CO2*	*PO2*	**10**
	b)		List and explain the different data channels that could be used in a CNN.	*CO2*	*PO2*	**5**

		c)	What is the importance of pre-trained models in CNN? Do they enhance the model performance? Explain.	*CO2*	*PO2*	**5**
			UNIT - IV			
	5	a)	As a solution to a Machine Learning application, the Engineer uses an unsupervised Neural Network that tries to reconstruct the output layer as similar as the input layer. Recognize the learning technique used here and detail it working principle.	*CO1*	*PO4*	**10**
		b)	When do you prefer using Transfer learning & why?	*CO2*	*PO2*	**5**
		c)	Briefly explain the Generative Adversarial Networks and list their real time applications.	*CO2*	*PO2*	**5**
			UNIT - V			
	6	a)	Deduce the Variational Stochastic Maximum Likelihood Algorithm for training a Deep Boltzmann Machine (DBM) with two hidden layers.	*CO3*	*PO3*	**10**
		b)	Elaborate on the different types of Auto Regressive Networks.	*CO3*	*PO3*	**10**
			OR			
	7	a)	Illustrate the Discrete Stochastic operations through which you can realize Back-Propagation.	*CO2*	*PO2*	**10**
		b)	Give inferences to the fact that DBM Parameter Learning is an interesting property of DBM.	*CO2*	*PO2*	**10**

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