Laghu Singh Charitable Trust's (Regd.)
THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY
Autonomous College Affiliated to University of Mumbai
Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra(GoM)
Conferred Autonomous Status by University Grants Commission (UGC) for 10 years w.e.f. A.Y 2019-20
Amongst Top 200 Colleges in the Country, Ranked 193rd in NIRF India Ranking 2019 in Engineering College category
• ISO 9001:2015 Certified • Programmes Accredited by National Board of Accreditation (NBA), New Delhi
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Website : www.tcetmumbai.in

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IN-SEMESTER EXAMINATION (ISE-I) AUGUST, 2022
TT(Semester-V) CBCGS-HME 2020
Fundamentals of Machine Learning

Branch: AI & ML
Div.:
Duration: 60 Minutes
Instructions –

Date: 4 / 8 /2022
Timing: 3:30 PM to 4:30 AM
Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Solve any 5 Questions.	Marks	CO	Learning Level
	a.	Illustrate with examples why machine learning is important.	02	CO 1	L 3
	b.	Write short note on Supervised Learning.	02	CO 1	L 3
	c.	Inspect the trade -off between Bias and Variance.	02	CO 2	L 4
	d.	Differentiate between Lasso and Ridge Regression.	02	CO 2	L 4
	e.	Write short note on Bias.	02	CO 2	L 3
	f.	Examine the issues in Machine Learning.	02	CO 1	L 5
	g.	Write Short note on Underfitting.	02	CO 2	L 3
Q.2.	a.	Illustrate with example Candidate Elimination Algorithm.	05	CO 1	L 3
		OR			
	b.	Investigate the problem of Overfitting and how can we avoid it.	05	CO 2	L 4
Q.3	a.	Differentiate Unsupervised, Semi-Supervised and Reinforcement Machine Learning.	05	CO 1	L 3
		OR			
	b.	Write the final version space for the below-mentioned training examples using Find-S algorithm *Example	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport* 1 Sunny Warm Normal Strong Warm Same Yes 2 Sunny Warm High Strong Warm Same Yes 3 Rainy Cold High Strong Warm Change No 4 Sunny Warm High Strong Cool Change Yes	05	CO 1	L 3

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IN-SEMESTER EXAMINATION (ISE-II) SEPTEMBER, 2022
TT(Semester-V) CBCGS-HME 2020
Fundamentals of Machine Learning

Branch: AI & ML
Div.:
Duration: 60 Minutes
Instructions –

Date: 13/9/22
Timing: 3:30 PM to 4:30 AM
Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Solve any 5 Questions.	Marks	CO	Learning Level
	a.	Investigate the intuition behind Logistic Regression in detail.	02	CO 2	L4
	b.	Inspect how the Random Forests give output for Classification, and Regression problems?	02	CO 2	L4
	c.	Discuss the advantages and disadvantages of Decision Tree?	02	CO 2	L 2
	d.	Differentiate between Generative and Discriminative models.	02	CO 2	L 4
	e.	Write short note on Neural network	02	CO 2	L3
	f.	Outline the advantages of Tree Models over Linear Models	02	CO 2	L4
	g.	Explain briefly the properties of Gini Impurity.	02	CO 2	L 2
Q.2 .	a.	Illustrate the steps of k-Means Clustering Algorithm.	05	CO 4	L 4
		OR			

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IN-SEMESTER EXAMINATION (ISE-II) SEPTEMBER, 2022

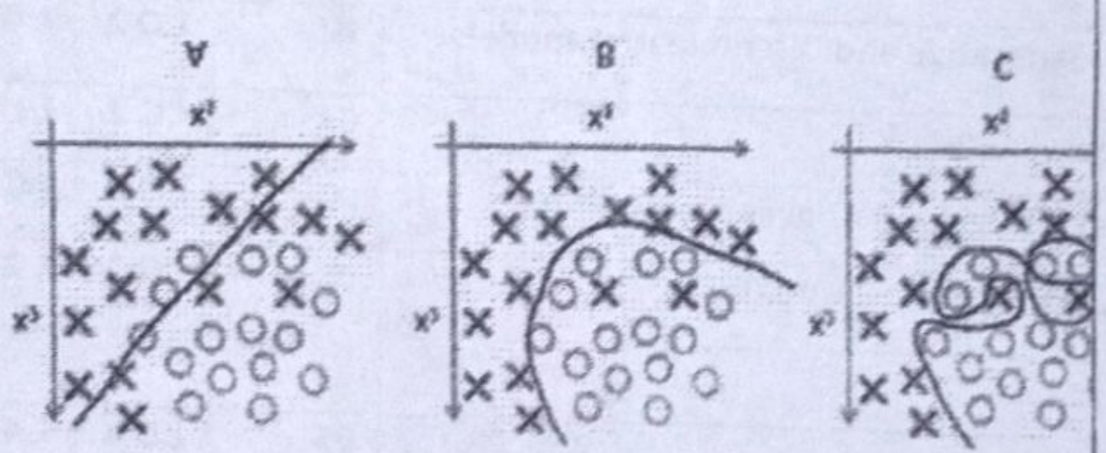
TT(Semester-V) CBCGS-HME 2020

Fundamentals of Machine Learning

Branch: AI & ML
Div.:
Duration: 60 Minutes
Instructions –

Date: 13/9/22
Timing: 3:30 PM to 4:30 AM
Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

	b.	Explain the ways to control Overfitting in Decision Trees.	05	CO 2	L2
Q.3	a.	Describe basic components of Perceptron.	05	CO 2	L2
		OR			
	b.	Investigate what you can infer from each of the hand drawn decision boundary of Logistic Regression below? 	05	CO 2	L 4

i) Multiplication of weights and ~~bias~~ Input
ii) Adding of bias
3) Activation
loss = $y_{predicted} - y_{original}$

IN-SEMESTER EXAMINATION (ISE-III) OCTOBER, 2022
TT(Semester-V) CBCGS-HME 2020
Fundamentals of Machine Learning

Branch: AI & ML
Div.:
Duration: 60 Minutes

Date: 13/10/22
Timing: 3:30 PM to 4:30 AM
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Solve any 5 Questions.	Marks	CO	Learning Level
	a.	Define the term "min_pts" estimated in the DBSCAN Algorithm?	02	CO 2	L 1
	b.	Write down the names of some popular Activation Functions used in Neural Networks.	02	CO 2	L 3
	c.	Demonstrate how the parameter "Distance-function" estimated in the DBSCAN Algorithm?	02	CO 4	L 3
	d.	A neural network model is said to be inspired from the human brain. Illustrate the reason why?	02	CO 2	L 3
	e.	Is linear discriminant analysis (LDA) classification or regression? Justify your answer.	02	CO 5	L 5
	f.	Outline the role of Activation functions in Neural Networks?	02	CO 2	L 4
	g.	Explain K- Medoids Clustering Algorithm.	02	CO 3	L 2
Q.2.	a.	Explain Radial Basis Function.	05	CO 4	L 2
		OR			
	b.	Write Backward Propagation in Neural Networks in detail?	05	CO 2	L 3
Q.3	a.	Differentiate between Forward propagation and Backward Propagation in Neural Networks?	05	CO 2	L 4
		OR			
	b.	Write the pseudocode of a Principal Component Analysis(PCA)algorithm.	05	CO 5	L 3