

IV B.Tech II Semester Regular Examinations, September - 2020

MACHINE LEARNING

(Common to Computer Science and Engineering and Information Technology)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) Define binary Classification. [2]
- b) Describe the performance of Multi-class classifier. [3]
- c) What is a decision tree? [2]
- d) What is Minkowski distance? [2]
- e) What is discriminative probabilistic model? [2]
- f) What is the representational power of perceptron? [3]

PART-B (4x14 = 56 Marks)

2. a) What are the different types of a Machine Learning models? [7]
- b) Explain about Feature Construction and Transformation. [7]
3. a) How to handle more than two classes in beyond Binary Classification. [7]
- b) Explain the following [7]
- i. One-versus-one voting.
- ii. Loss based decoding.
- iii. Coverage counts as scores.
4. a) Explain Rule set for Ranking and Probability estimation. [7]
- b) Discuss in detail about Learning Ordered Rule Lists. [7]
5. a) Discuss in detail about Soft Margin SVM. [7]
- b) Describe Nearest-Neighbor Classification in detail. [7]
6. a) Write detailed note on Feature Transformations. [7]
- b) Explain about normal distribution with the help of sample data. [7]
7. a) Explain about Principle Component Analysis in detail. [7]
- b) Discuss in detail about representation of Neural Networks. [7]

R16

Set No. 2

IV B.Tech II Semester Regular Examinations, September - 2020

MACHINE LEARNING

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Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) What is Scoring Classifier? [2]
- b) What is unsupervised learning? [3]
- c) Define Feature Tree. [2]
- d) What is Support Vector Regression? [3]
- e) Write a short note on random forests. [2]
- f) Write a short note on PCA? [2]

PART-B (4x14 = 56 Marks)

2. a) Explain in detail about geometric model. [7]
- b) Explain the two uses of features in machine learning. [7]
3. a) Explain the following
i. most general consistent hypothesis. [7]
ii. closed concepts in path through the hypothesis [7]
- b) Write in detailed note on Regression. [7]
4. a) Explain in detail about ranking and probability estimation tree. [7]
- b) Discuss about First-Order rule learning in detail. [7]
5. a) Explain about the Least-Squares method? [7]
- b) Discuss in detail about Distance Based Clustering. Write its importance in machine learning.
6. a) Write about Probabilistic models for categorical data. [7]
- b) Discuss about the Normal Distribution and its Geometric interpretations? [7]
7. a) Explain how dimensionality reduction takes place using PCA. [7]
- b) Describe in detail about neural networks role in machine learning. [7]



YOUR PATH TO SUCCESS

R16**Code No: 137DV****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations,****December - 2019 MACHIN****LEARNING****(Computer Science and Engineering)****Time: 3 Hours****Max. Marks: 75**

Note: This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) List the basic design issues to machine learning. [2]
- b) State version space representation theorem. [3]
- c) What is the representational power of perceptrons? [2]
- d) How to compute expected value and variance of a random variable? [3]
- e) State Bayes theorem. [2]
- f) Under what conditions is successful learning possible? [3]
- g) How to use entropy as evaluation function? [2]
- h) What factors contribute to the popularity of genetic algorithm? [3]
- i) What is the essential difference between analytical and inductive learning methods? [2]
- j) What are the limitations of explanation based learning? [3]

PART – B**(50 Marks)**

2. Which disciplines have their influence on machine learning? Explain with examples. [10]
- OR
- 3.a) Contrast the hypothesis space search in ID3 and candidate elimination algorithm.
 - b) Illustrate the impact of overfitting in a typical application of decision tree learning. [5+5]
4. Discuss how a multi layer network learns using a gradient descent algorithm. [10]
- OR
- 5.a) Distinguish between inductive bias and estimation bias.
 - b) Explain the methods for comparing the accuracy of two hypotheses. [4+6]
- 6.a) Explain the features of Bayesian learning methods.
 - b) Discuss the relationship between the maximum likelihood hypothesis and the least-squared error hypothesis. [6+4]

OR

- 7.a) Prove ϵ -exhausting the version space theorem.
b) With suitable example discuss a radial basis function network. [5+5]
8. Describe the representation of hypotheses and genetic algorithms used in this. [10]
OR
- 9.a) How rules are post pruned? Explain with an example.
b) What is Q function? Write an algorithm for learning Q. [5+5]
10. Explain an algorithm for regressing a set of literals through a single horn clause. [10]
OR
11. Describe the TANGENTPROP algorithm to train a neural network to fit both training values and training derivatives. [10]



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YOUR PATH TO SUCCESS