USN

14SCS41

Fourth Semester M.Tech. Degree Examination, June/July 2016
Machine Learning Techniques

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a. Explain the steps in designing a learning system.   (10 Marks)
    b. Describe the find – S algorithm. Explain its working, taking the enjoy sport concept and training instances given below:

Example	Sky	Air temp	Humidity	Wind	Water	Forecast	Enjoy sport
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	Warm	Change	Yes

(10 Marks)

2   a. Explain the concepts of entropy and information gain.   (06 Marks)
    b. Describe the ID3 algorithm for decision tree learning.   (10 Marks)
    c. Give decision trees to represent the following Boolean functions:
        i) $A \,\&\& - B$
        ii) $A \lor [B \,\&\& C]$
        iii) A XOR B
        iv) $[A \,\&\& B] \lor [C \,\&\& D]$ (04 Marks)

3   a. Explain the differentiable sigmoid threshold unit.   (06 Marks)
    b. Consider two perceptrons defined by the threshold expression $\omega_0 + \omega_1 x_1 + \omega_2 x_2 > 0$, perception A has weight values
        $\omega_0 = 1,\ \omega_2 = 2,\ \omega_2 = 1$
        and perceptron B has weight values
        $\omega_0 = 0,\ \omega_2 = 2,\ \omega_2 = 1$
        True or False? Perceptron A is more-general-than perceptron B.   (04 Marks)
    c. Explain the back propagation algorithm. Why is it not likely to be trapped in local minima?   (10 Marks)

4   a. Explain the terms genetic algorithms and genetic programming.   (05 Marks)
    b. Explain GA, a prototyping genetic algorithm.   (10 Marks)
    c. Explain stacking of blocks problem and genetic programming solution.   (05 Marks)

5   a. Explain naïve Bayes classifier.   (10 Marks)
    b. Explain mistake bound model for learning and apply it to FIND-S algorithm.   (10 Marks)

6   a. Describe K-NEAREST NEIGHBOUR learning algorithm for continuous valued target functions. Discuss one major drawback of this algorithm and how it can be corrected.   (12 Marks)
    b. Write the FOIL algorithm for learning rule sets and explain the purpose of outer loop and the function of inner loop.   (08 Marks)

7   a. What is reinforcement learning?   (06 Marks)
    b. Explain the Q function and Q learning algorithm.   (10 Marks)
    c. Compare inductive learning and analytical learning.   (04 Marks)

8   Write short note on:
    a. Bayesian belief networks.   (06 Marks)
    b. Occam's Razor and minimum description principle.   (06 Marks)
    c. Case based learning.   (08 Marks)

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Fourth Semester M.Tech. Degree Examination, June /July 2016
Wireless Networks and Mobile Computing

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Discuss the content architecture with respect to mobile computing with a neat sketch.
                                                                    (10 Marks)
   b. List and explain the main elements of IS–95 along with the reference architecture model.
                                                                    (10 Marks)

2 a. What is meant by handover? Discuss various types of handover and handover procedure in GSM.
                                                                    (10 Marks)
   b. Define SMS. List and explain unique characteristics of SMS. **(06 Marks)**
   c. Write a short note on WiMAX.   **(04 Marks)**

3 a. List the components of PDA. Explain each of them in detail.   **(10 Marks)**
   b. Briefly explain discovery, registration and tunneling operations in mobile IP. **(10 Marks)**

4 a. With a neat diagram, explain server synchronization smart client architecture. **(10 Marks)**
   b. What are device emulators? Write various features of device emulators. Also discuss any two device emulators in brief.
                                                                    (10 Marks)

5 a. Explain palm OS architecture with a neat sketch.   **(10 Marks)**
   b. Write the smart client development cycle. Explain needs analysis and design phase in detail.
                                                                    (10 Marks)

6 a. Discuss various steps involved in processing a wireless request in detail. **(10 Marks)**
   b. Explain WAP programming model using a wireless gateway.   **(06 Marks)**
   c. Explain various benefits of WAP.   **(04 Marks)**

7 a. What is the necessity of XHTML in wireless internet applications? How XHTML differs from HTML?
                                                                    (06 Marks)
   b. What is meant by CDC? Discuss three CDC profiles.   **(07 Marks)**
   c. Discuss several security features built into MIDP2.0 to protect the users from rogue applications.
                                                                    (07 Marks)

8 a. Explain MID let life cycle with states and context methods. **(10 Marks)**
   b. Explain the following low–level GUI components :
       i)   Canvas
       ii) Game API
       iii) Sprite
       iv) Tilled layer.
                                                                    (10 Marks)

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