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Question Paper Code: 49235

M.E. DEGREE EXAMINATION, MAY 2015.

Elective

Computer Science and Engineering

14PNE514 – SOCIAL NETWORK ANALYSIS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (5 x 1 = 5 Marks)

1. The semantic solution to the current web is to apply knowledge technologies to fill the knowledge gap between the human and the machine. The solution is to
 - (a) Provide personal information in semantic format and attach to metadata
 - (b) Aggregate information and provide background knowledge
 - (c) Both (a) and (b)
 - (d) None of the above
2. Popular random walk based similarity measures are _____ and _____.
 - (a) Personalized pagerank, and Simrank
 - (b) In-neighbors and Out- neighbors
 - (c) Outdegree and Indegree
 - (d) Path weight and Edge weight
3. Which are the two important phenomena that can apply in online social networks?
 - (a) Similarity and Homophily
 - (b) Cosine similarity and Co-citation regularity
 - (c) Cosine similarity and Proximity
 - (d) Homophily and Co-citation regularity

4. _____, _____ and _____ are examples of activities recorded in the social network constitute streams and the entities like users; resources and tags are rather stationary.
- (a) Influential nodes, sliding window and graph elements
 - (b) Postings, uploading of resources and exchange of messages
 - (c) Both (a) and (b)
 - (d) None of the above
5. Opinion mining and sentiment analysis related techniques are _____.
- (a) Opinion extraction/classification/summarization/visualization
 - (b) Temporal sentiment and Wish analysis analysis
 - (c) Cross-lingual/cross-domain sentiment analysis
 - (d) All of the above

PART - B (5 x 3 = 15 Marks)

6. What are the blog features used in social network extraction?
7. How do we visualize and analyze social network data using hadoop and map reduce framework?
8. Why community discovery in social networks is useful?
9. What do you infer from the terms social similarity and influence?
10. “Irony detection in opinion mining” – Comment on this phrase.

PART - C (5 x 16 = 80 Marks)

11. (a) Describe some of the most important statistical properties that are apparent in social networks. Answer the following queries given below and your answer shall include a particular emphasis on dynamic properties, and some of the newer findings with respect to edge weights.
- (i) How do social networks look like, on a large scale? (4)
 - (ii) How do the non-giant weakly connected components behave over time? (6)
 - (iii) What distributions and patterns do weighted graphs maintain? (6)

Or

- (b) (i) How to facilitate and enhance the analysis of online social networks by exploiting the power of semantic social network analysis? Explain about the classical methods that are involved in social network analysis. (12)
- (ii) Comment on the emergence of social web and discussion networks. (4)
12. (a) (i) Classify the visualization of social networks in four main groups, depending on the main focus of the predominant visual task for which the visualization metaphor is envisioned. (10)
- (ii) How do we interpret and depict explicitly the links between nodes visualizations in a multitude of devices? (6)

Or

- (b) Social network data can be modeled by a graph where the nodes represent individuals and the edges represent binary social relationships. This model does not represent advancement in terms of interoperability and extensibility. Can you suggest a state of the art representation of the social network data model which reflects the advancements and satisfies the primary concern of aggregation and reuse of electronic data? (16)
13. (a) (i) Illustrate briefly about how community detection and mining is done using the various algorithms. (10)
- (ii) Compare and contrast the node classification methods based on iterative application of traditional classifiers using graph information as features and methods which propagate the existing labels via random walks. (6)

Or

- (b) Discuss how social network data is aggregated using the appropriate methods. Can you explain how web community is evolved from a series of web archive? Assume a suitable case study. (16)
14. (a) (i) You need to organize the advances on evolution in a multi-dimensional framework. Identify four dimensions that are associated to knowledge discovery in social networks and elaborate on their interplay in the context of evolution. Design and organize the studies across the first, second and forth dimensions in the framework and depict it. (12)
- (ii) How do we address the problem of influence maximization that can be trace backed to the research on “word-of-mouth” and “viral marketing”? (4)

Or

- (b) (i) Discuss briefly about traditional expert-location solutions which do not consider any graph/network structures. (6)
 - (ii) Compare and analyze feature-based classification and kernel-based method to matrix factorization and probabilistic graphical models for link prediction techniques. Your comparison should be based on the parameters like model complexity, prediction performance, scalability, and generalization ability. (10)
15. (a) (i) Illustrate machine learning and ontology based sentiment classification mining methods to classify each text to a certain category in social networks. (12)
- (ii) Analyze the role of sentiment in identifying temporal relations between the events. (4)

Or

- (b) Discuss the following
 - (i) Is sentiment important for your social media analysis? Is it relevant or even accurate? (6)
 - (ii) List five tools to help you get your feet wet on the whole sentiment analysis. You can use these tools to track mentions about yourself or your business/brand or to get an analysis on a specific topic or keyword, perhaps your industry or even your competition. (10)