GA Assignments

1. Discuss the primary data structure for genetic algorithms. How reproduction, crossover and mutation is performed on such data structure? explain with practical example. - 20
2. Present the mathematical foundation of genetic algorithm and building block hypothesis with reference to schema theorem. Highlight its importance in GA. - 16
3. Discuss and present the situations that the objective function shall map to fitness function. Explain the various ways of fitness scaling. - 30
4. Discuss and present the issues posed by two arm BANDIT problem and its implementation in GA with reference to enhancement of security of Computer Network. - 18
5. Discuss and present the various models that De Jong presented in his dissertation. -19
6. Give and illustration of Dominance, Diploidy, and Abeyance along with its importance and application with reference to GA. -8
7. Explain the concept of Niche and speciation in GA with example of each. - 1
8. Explain the multi objective optimization in GA with example. Discuss the knowledge based technique for initializing a GA. - 17
9. Discuss and present the concept of GBML (Genetic Based Machine Learning) along with classifier system and rule based system. -2
10. Discuss and present GA implementation techniques like asynchronous concurrent network, object based model, synchronous master slave and semi-synchronous master slave models. - 10
11. Discuss the application of genetic based machine learning and prepare a presentation on the rise of GBML with development of CS-1. -11
12. Discuss the impact of fitness function on reproduction, crossover and mutation. Highlight the issues of implementation of neuro-genetic algorithm with example. -12
13. Prepare presentation on: -6
    a. Box and evolutionary operation
    b. Smith's poker player
14. Prepare presentation on: -21
    a. Bagley and adaptive game playing
    b. Rosenberg and biological cell simulation

Note:

1. *Students class roll no. is written at the end of the assigned question.*
2. *Assigned topic has to be presented by the assigned individuals based on the successive class happening serially. If he/she fails to present on the serially assigned time, then next question is supposed to be presented on the same date.*
3. *Every individual has to prepare presentation slide and present on that topic that follows class discussion on the same.*
4. *If the student fails to present at his/her term, either there should be someone to present instead or that person will be discarded form the evaluation.*
5. *Every student has to prepare report in word on the assigned topic and has to be submitted within a week after the presentation.*

6. *For those who fails to present on the topic assigned time, they are supposed to prepare a report in hand written form and submit by the due date. It must be done individually and independently with handwritten form.*

Due date: Shrawan, 15