MT4032 Stochastic Processes Semester Project Spring 2025

Sections: BSE-6 A &B

Read the details carefully and submit your ideas to CR and CR will submit them to the instructor within 3 days after the announcement. Your proposal must include details of the group members and topics.

Project Details:

1. Choose a real-world example and develop a web-based module by integrating Python or R language to model your selected data.
2. Your module has an example of Markov Chain, Hidden Markov Chain and Queuing Theory.
    a) Markov Model can classify the states, develop diagrams, should answer the steady state probabilities, average passage time, average recurrence time, average absorption time etc.
    b) Hidden Markov Model should answer the steady state probabilities, find the probabilities of observing state using forward algorithm, and also can use Viterbi algorithm to identify the most likely sequence of hidden state.
    c) Queuing theory can answer the basic questions of M/M/1.
3. Present your results in a well-presentable form.
4. Write a report on the whole task using the default pattern available at the end of this document
5. The Submission Deadline of the Project will be 5th May 2025.

Groups Details

1. A team will consist of at most 4 members.
2. Choose a leader and a name/logo for the team.
3. If any of your team members do not play a significant role in teamwork, the leader will intimate before the submission deadline.
4. If the team leader will not coordinate properly, the majority may change it and intimate it before the submission deadline.

Evaluation Scheme

- ***How carefully was the above-mentioned instruction followed?***
- ***How many appropriate Models were used?***
- ***How attractive and intelligent is your interface?***
- ***How is the Project report made?***

General Instructions

1. Viva of your submitted work can be conducted based on initial evaluation.
2. If your data, code, or application is similar to any other group (Similarity or Plagiarism) it causes zero marks.
3. Late submissions will not be entertained.
4. Paste all codes after giving them proper titles on a Word file using font size 9 and line space 1, so a minimum space can be managed.
5. Paste screenshots of your interface with different features/results on a Word file using the default format.
6. You will submit both hard and soft files of your Project till the submission date. The hard copy can be submitted to the office while soft copy will be submitted at online portal.

**********DRAFT OF SUBMISSION**********

First Page:

Project Title

[Logo if any]

1	Roll Number	Name	Section
2	Roll Number	Name	Section
3	Roll Number	Name	Section
4	Roll Number	Name	Section

Next Pages:

1. Detail of the web-based system

Including screen shorts and important features. XXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXX XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX

2. Morkov Models

Detail the problem and solution given using Markov models

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

3. Hidden Markov Models

Detail the problem and solution given using Hidden Markov models

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

4. Queuing Theory

Detail the problem and solution given using Queuing Theory

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

5. Codes

Mention programming language and Paste code with 1 line space and no extra space with proper comments for all models XXXXXXXXXXXXXXXXXXXXXXXXXX

6. Conclusion

Conclude your results in one paragraph XXXXXXXXXXXXXXXXXXXXXXXXXX

**********END**********