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Courses » Advanced Topics in Probability and Random Processes

Announcements Course Ask a Question **Progress** Mentor FAQ

Unit 7 - Week **6:Discrete Time Markov Chain**

Course outline

How to access the portal

Week 1: Introduction to probability and Random Variable

Week 2: Random process basics and infinite sequence of events

Week 3: Convergence of Sequence of Random Variables

Week 4: Applications of Convergence Theory

Week 5: Markov Chain

Week 6:Discrete **Time Markov** Chain

- Discrete Time Markov Chain-2
- Discrete Time Markov Chain-3

Assignment 6

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

Due on 2018-09-19, 23:59 IST.

1) let $\{X_n\}$ be a homogeneous Markov chain with the state space $V=\{0,1\}$. 1 point If $P(X_{n+1}=0/X_n=0)=0.4$ and $P(X_{n+1}=1/X_n=1)=0.3$, then the translation probability matrix of the chain is

$$P = \begin{bmatrix} 0.4 & 0.6 \\ 0.7 & 0.3 \end{bmatrix}$$

$$P = \begin{bmatrix} 0.6 & 0.4 \\ 0.7 & 0.3 \end{bmatrix}$$

$$P = \begin{bmatrix} 0.4 & 0.6 \\ 0.3 & 0.7 \end{bmatrix}$$



$$P = \begin{bmatrix} 0.4 & 0.6 \\ 0.3 & 0.4 \end{bmatrix}$$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$P = \left[egin{matrix} 0.4 & 0.6 \ 0.7 & 0.3 \end{matrix}
ight]$$

2) Let $\{X_n\}$ is a homogeneous Markov chain with the state space $V=\{0,1,2\}$ and state **1** point transition probability $p_{i,j}, i=0,1,2$, j=0,1,2 . Using the Chapman Komogorov equation, the 2-step transition probability $p_{1,2}^{\left(2\right)}$ can be expressed $\,$ as



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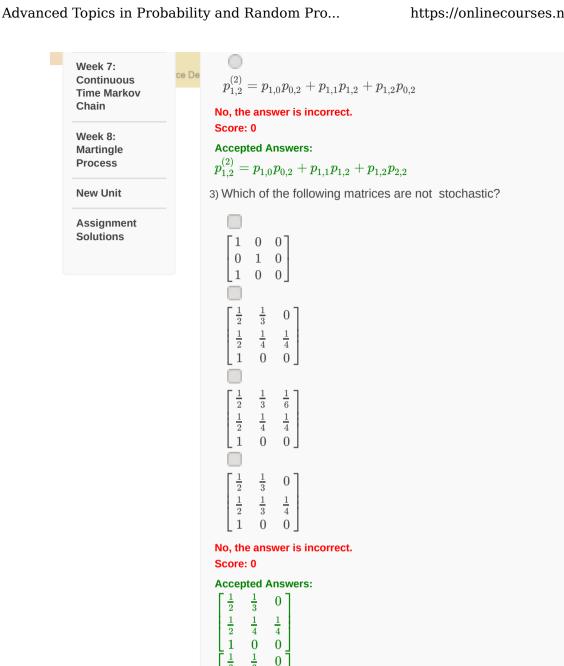
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1 point



⁴⁾ Consider a 4-state Markov chain with the transition probability $1 \quad 0 \quad 0$

0 . The largest eigen value of $\,^{P\,\mathrm{is}}$ $\frac{1}{3}$ 0 $\frac{1}{3}$ $\operatorname{matrix} P =$

 $\frac{1}{3}$ 0

No, the answer is incorrect.

Score: 0

Accepted Answers:

1 point

1		
5) Suppose $\lambda=1$ is a distinct eigen value of a 3×3 transition matrix I corresponding eigen vector is	P. The	1 point
$\begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$ $\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$ $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$ $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$		
No, the answer is incorrect.		
Score: 0		
Accepted Answers: $\begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}$		
6) Consider an independent increment process $\{W(t), t \geq 0\}$ where the increment $W(t+s)-W(t)$ is normally distributed. $\{W(t), t \geq 0\}$ is a		1 point le of a
Discrete-time discrete state Markov process		
Discrete-time continuous state Markov process		
Continuous-time continuous state Markov process		
Continuous-time discrete state Markov process		
No, the answer is incorrect. Score: 0		
Accepted Answers: Continuous-time discrete state Markov process		
Previous Page	End	