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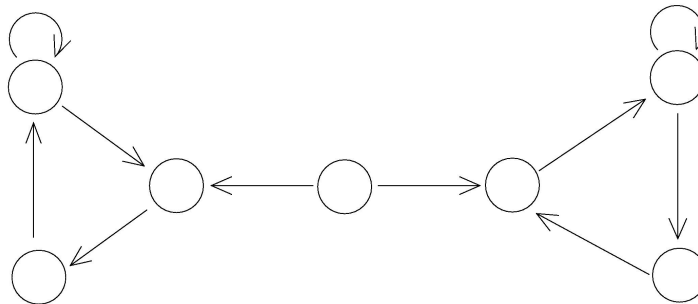
Bookmark

Problem 1: Steady-state convergence

(4/6 points)

Let $\mathbf{X}_0, \mathbf{X}_1, \dots$ be a Markov chain, and let $r_{ij}(n) \equiv \mathbf{P}(X_n = j \mid X_0 = i)$.

1. Consider the Markov chain represented below. The circles represent distinct states, while the arrows correspond to positive (one-step) transition probabilities.



For this Markov chain, determine whether each of the following statements is true or false.

► Unit 6: Further topics on random variables

► Unit 7: Bayesian inference

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► Unit 8: Limit theorems and classical statistics

► Unit 9: Bernoulli and Poisson processes


▼ Unit 10: Markov chains

Unit overview

Lec. 24: Finite-state Markov chains

Exercises 24 due May 18, 2016 at 23:59 UTC 

Lec. 25: Steady-state behavior of Markov chains

Exercises 25 due May 18, 2016 at 23:59 UTC 

(a) For every i and j , the sequence $r_{ij}(n)$ converges, as $n \rightarrow \infty$, to a limiting value π_j , which does not depend on i .

True ▼

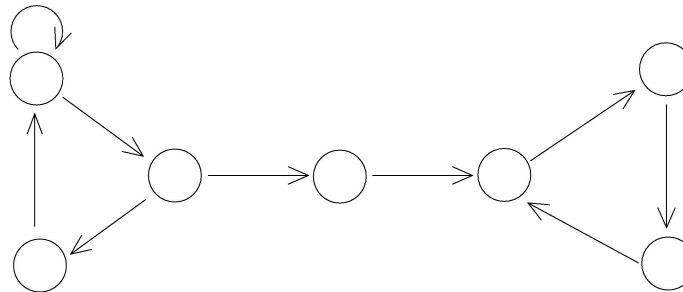


(b) Statement (a) is true, and $\pi_j > 0$ for every state j .

False ▼



2. Consider the Markov chain represented below. The circles represent distinct states, while the arrows correspond to positive (one-step) transition probabilities.




(a) For every i and j , the sequence $r_{ij}(n)$ converges, as $n \rightarrow \infty$, to a limiting value π_j , which does not depend on i .

False ▼




Lec. 26: Absorption probabilities and expected time to absorption

Exercises 26 due May 18, 2016 at 23:59 UTC 

Solved problems

Problem Set 10

Problem Set 10 due May 18, 2016 at 23:59 UTC 

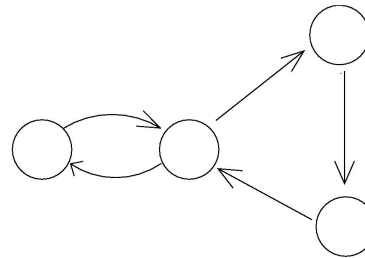
► Exit Survey

(b) Statement (a) is true, and $\pi_j > 0$ for every state j .

False ▼



3. Consider the Markov chain represented below. The circles represent distinct states, while the arrows correspond to positive (one-step) transition probabilities.



(a) For every i and j , the sequence $r_{ij}(n)$ converges, as $n \rightarrow \infty$, to a limiting value π_j , which does not depend on i .

True ▼



(b) Statement (a) is true, and $\pi_j > 0$ for every state j .

False ▼



You have used 1 of 1 submissions

Printable problem set available here .

DISCUSSION

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