

ECE/CS 541 Project #1
Fall 2016
Due November 4, 2016

Markov chains have application in many domains. The objective of this project is to have you independently learn about one of these.

Choose one of the following topic areas

- Algorithms, e.g., Google's Page Rank algorithm
- Analysis of social networks
- Games of chance
- Computer architecture (e.g. performance of hierarchical memory systems)
- Models of network traffic
- Models of communication systems
- Statistical physics
- Finance

or propose to Professor Nicol some other domain of particular interest.

1. By Monday October 17 email Professor Nicol and Kartik a proposed area and topic within that area for your project.
2. Using the internet and possibly even a library (!) research the nature of Markov chain models that have been developed in that area, write at least 10 pages describing this, and be sure to include citations of papers or sites you've studied for the basis of this report.
3. Develop some model in this domain that is not a direct copy of an existing one in the literature. Describe its state space and its transitions. Draw a state transition diagram.
4. Depending on the application area perform either a transient analysis or a stationary analysis of the model, studying the sensitivity of the model's behavior to variations in the model parameters selected.

The project write-up will be due in class November 4, 2016.