Introduction to Probability

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Probability

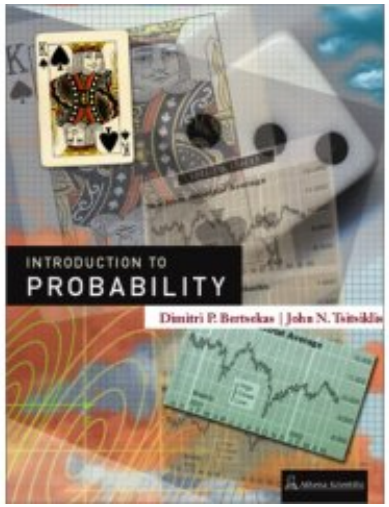
- Probability and its relatives (Possible, Probable, Probably) were read in many contexts
- Probability was developed to describe phenomena that cannot be predicted with certainty
  - Frequency of occurrence
  - Subjective belief
- Everyone accepts that the probability (of a certain thing to happen) is a number between 0 and 1 (?)

Main Objectives

- Develop the art of describing uncertainty in terms of probabilistic models
  - Fundamentals of probability theory: discrete/continuous random variables, multiple random variables, etc.
  - Definition, axioms, and inferences following the axioms
- Learn the skills of probabilistic reasoning
  - E.g., the use of Bayesian statistics (Bayes' rule)

Textbook

- D. P. Bertsekas, J. N. Tsitsiklis, "*Introduction to Probability*," Athena Scientific, 2002 (全華代理)

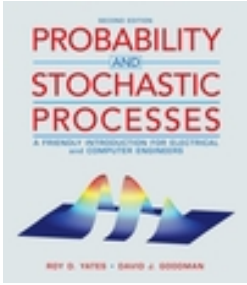


- Website
  - http://www.athenasc.com/probbook.html

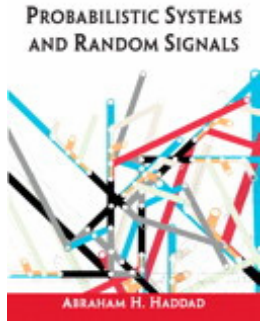
- Supplement problems of textbook
  - Theoretic problems (marked by *)
  - Problems in the text (various levels of difficulty)
  - Supplementary problems (at the book's website)

Reference Books

- Roy D. Yates, David J. Goodman, "*Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers*," 2nd Edition, Wiley, 2004



- Abraham H. Haddad, "*Probabilistic Systems and Random Signals*," Prentice Hall, 2005



Grading (Tentatively)

- Midterm and Final: 45%
- Quizzes: 25% ($\geq$ 5 times)
- Homework: 20%
- Attendance/Other: 10%

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