Quiz 13 : Independence, Bayes

written by Alvin Wan . alvinwan.com/cs70 . Wednesday, October 19, 2016

This quiz does not count towards your grade. It exists to simply gauge your understanding. Treat this as though it were a portion of your midterm or final exam.

1 Independence and Bayes' Rule

1. Construct a sample space and events A, B, and C so that these events are pairwise independent but not mutually independent.

2. Is it possible to compute $\Pr(B|A)$ given $\Pr(A|B)$, $\Pr(B)$, and $\Pr(\bar{A}|\bar{B})$? If so, compute it.

Consider a fair coin c_1 and a coin c_2 with bias p. Roll a 6-sided dice. If you roll 1 or 2, flip c_1. If you roll 3, flip either c_1 or c_2 with probability $\frac{1}{2}$. If you roll 4, 5, or 6, flip c_2.

1. What is the probability that you rolled a 3, given you see heads?

2. What is the probability that you rolled 3 or fewer, given you see heads?

3. What is the probability that you rolled more than 3 given that you see heads?