ECE 235: Problem Set 4

Assigned: Friday October 23
Due: Tuesday November 3 (by noon, in course homework box)
Reading: Hajek, Chapter 2
Topics: Convergence concepts; Law of Large Numbers; Central Limit Theorem; Chernoff Bound

Practice problems (not to be turned in): The even numbered problems in Chapter 2, up to Problem 2.32. Compare your solutions with the solutions provided to make sure you understand the concepts.

Problems 1-5: Problems 2.7, 2.11, 2.13, 2.15, 2.19

Problem 6: A biased coin with probability of heads equal to 0.6 is thrown 400 times. Assume that the outcome of each throw is independent.
(a) Compute (i.e., find the numerical value of) the probability of obtaining 220 heads or less.
(b) Compare the probability in (a) with the CLT approximation and with an optimized Chernoff bound. Which works better?
(c) Repeat (a)-(b) for the probability of obtaining 320 heads or more.