UC Berkeley
Department of Electrical Engineering and Computer Sciences

EE126: Probability and Random Processes

Discussion 6

Date: Wednesday, March 2, 2016

Problem 1. (Optional) In this problem, we study the Ideal Soliton Distribution (ISD).
Assume that the decoder has recovered x chunks out of k chunks.
(a) The release probability $q(d, x)$ is the probability that a coded symbol of degree d becomes 'resolvable' for the first time when x symbols are found. Find $q(d, x)$.
(b) The overall release probability $r(x)$ is the probability that a *random* coded symbol becomes 'resolvable' for the first time when x symbols are found. Find $r(x)$ using p and q.
(c) Ideal Soliton Distribution (ISD) is defined as follows:

$$p_{\text{ISD}}(d) = \begin{cases} \frac{1}{k} & d = 1 \\ \frac{1}{d(d-1)} & d > 1. \end{cases}$$

Find $r(x)$ when p_{ISD} is used.

Problem 2. After attending an EE126 lecture, you went back home and started playing *Twitch Plays Pokemon*. Suddenly, you realized that you may be able to analyze *Twitch Plays Pokemon*.

Figure 1: A snapshot of 'Twitch Plays Pokemon' - 1

(a) Find the expected number of moves until Red reaches the stairs in Figure 1.

(b) Find probability that Red reaches the stairs in the bottom right corner in Figure 2.

Figure 2: A snapshot of 'Twitch Plays Pokemon' - 2