

2015 Spring - Information Theory

Homework 7 (Due to May.8)

Part 1: Channel Capacity

Let X and Y be the random variables representing the input and output of the channel, please calculate the channel capacity for different channel, where the channel capacity is defined as: $C_{inf} = \max_{P_X(\cdot)} I(X; Y)$

- Binary symmetric channel (BSC)
- Binary erasure channel (BEC)
- Z channel

Part 2: Matlab Exercise

Use Context Tree Algorithm to come up with an universal code.

Context Tree Algorithm is defined as follows:

Nodes s contains the sequence of source symbols that have occurred following context s . Depth is D .

There is a simple example below:

