

EE565: Video Communications

Prof. Kondi

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Homework #3

Due: Tuesday, April 3, 2007

Problem 1

(a) Use the H.263 public-domain video codec supplied to you to encode the “Foreman” sequence (`foreman.qcif`). Use the codec’s default rate control to encode the sequence at the following bit rates: 14000, 28000, 64000 bps. For each case, calculate the PSNR per frame using the supplied C program `getpsnr.c`. Create a plot of the PSNR versus the frame number.

(b) Repeat part (a) using the “Akiyo” sequence (`akiyo.qcif`). Try to explain the differences between the PSNR plots of “Foreman” and “Akiyo”.

Problem 2

Use Matlab to implement an encoder and decoder of the RCPC code of Table 3.5 of the textbook by Ngan, Yap and Tan. For each of the four channel coding rates ($1/4$, $1/3$, $1/2$, $2/3$), create a block of 3000 random bits, encode it using the RCPC encoder, pass it through a Binary Symmetric Channel with a bit error rate of 0.008 and decode it. Repeat the above experiment 100 times and calculate the average bit error rate.