Image communication project : Step 2

Serge Hochar and Mohamed Tahar Nguira.

Step 2: In this step we have to minimize the expectation of the distortion given a fixed contention window(number of time slots= 50) and many rate distortion models.

We first tried to construct a set of 10 dimension vectors (All 10 dimension vectors which components are multiple of 0.25 and that sum to 1)(sum of all the components of each vector is equal to 1). We have chosen a maximum dimension =10 because it's the highest doable value for our PC. So we have to maximize the expectation of D= f(P, G)(P : polynomial distribution probability of degree 9 and G is the load).

So to do, we have to span each possible vector P(cardinality of the set = 715) and each value of G with step 0.1 from 0.1 to 1. We have considered several rate distortion functions : D = a+b/(R+c),

where a, b, c are all the combinations of (10, 50 and 100)(27 possible combinations)

for example when a, b ,c = (10 10 10) we get

 P = [0   0   0.5000   0.2500   0   0   0   0   0.2500   0] where component J represents the probability of sending that packet (J-1) times. So it's degree = 8.

and a best number of users = 35 (load = 0.7)

a, b, c = (10 50 100), we get

P = [0   0   0.2500   0.5000   0   0.2500   0   0   0   0] So its degree = 5 and

the best number of users = 35 (load= 0.7)

We always got a number of users multiple of 5 and this is due to the fact that we are only considering values of G multiple of 0.1 (G = 0.1:0.1:1) and Number of users = G*number of time slots.