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Problem 1

1- spectral peaks: 3
LPC model order: 6

2. LPC, CELP, damped sinusoids.

3- a- other: 2 symbol error can be corrected.
b- 5 symbol error can be detected.

4. motion compensation.

5- Yes, reduces Packet loss when combining with channel coding
Yes, always reduces Packet loss

6- no, no influence

7- internet Layer

8. AVC, VVC

9. Latency, bettery life

10- Mean SSIM

11- UDP+IP

12- Tcp+IP, UDP+IP

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Prolem 2

2.1 Speech signal sequence is non-stationary signal (non-Paramitric). So we divided into blocks Then consider each block as stationary then apply model vocal tracks by time invariant all Pole filter with each block and the vocal cord excitation as either the impuls or white noise.

2.2.a Packet 1: 0, 1, 2, 3
Packet 2: 4, 5, 6, 7
Packet 3: 8, 9, 10, 11
Packet 4: 12, 13, 14, 15

2.2.b matrix-inter leaver is applied.
Packet 1: 3, 2, 0, 1
Packet 2: 7, 6, 5, 4
Packet 3: 9, 11, 8, 10
Packet 4: 13, 15, 12, 14

2-3 Tak two frame from video after each other Then calculate The deffrent between Those 2 frame by subtracte one fro The other after the nurmalization for each one. from The new value, The motion compensation vector should be calculated by divid The new value to blocks (8 x 8 each) and Then apply the Threshold Value base on The compression ration. ~~After calculate the Threshold apply the threshold on every block for The new frame.~~

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2.3 apply the Threshold on blocks by sitting the value under Threshold to zero and doing that on each block we get motion compensation imag. where black earia represent the original image so that mean no chang in that earia, while the white block represent the motion block or motion earia and all this whit-block represent the motion vector.

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Problem 3

P_k = Packet lost during Transmission
V_k: Probability of delay to the packets
P_b: " " bit error in a symbol
P_c: " " codeword error due to symbole error
P_s: " " symbole error due to bit error

P_k ?

$$=$$

$$P_k = \rho_k + (1 - \rho_k) V_k$$

$$P_k = \rho_k + (1 - \rho_k) V_k + (1 - \rho_k)(1 - V_k) \rho_{k|P_c}$$