CMPT 365 Multimedia Systems

Written Assignment 1

Deadline 8:00pm, Oct 14 (Sat), 2023

Note: This assignment is NOT group based. TA will provide submission guidelines.

Texbook 3rd Edition

1.5 Q2
6.4 Q3, 8, 12
4.4 Q 8, 9
5.7 Q11,14 (b)(c) only

EX1:
Assume one violin's sound is 65dB. (a) What is the sound level of 2 violins? (b) 5 violins? (c) 200 violins.

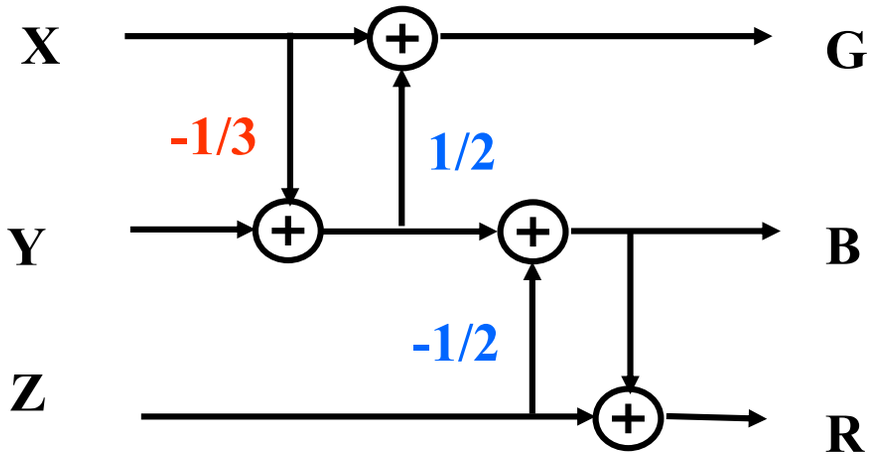
EX2:
Assume that a very quiet devices has a working noise of -10 dB. (a) How many such devices working together will their total noise be just audible? (b) What will be the total noise of 300 such devices working together?

EX3:
Assume one violin's sound is 65dB and the corresponding mic output is 3mV. (a) What's the mic output for a sound that is barely heard by you? (b) What is the mic output of 4 violins?

EX4:
Given Y=134, U=V=0, what is the RGB value of the pixel? (Hint: you don't have to use the conversion matrix)

EX5: Assume that the gray level of a pixel after gamma correction is 67, gamma is 2.2, and each pixel is represented by 8 bits, then what is the gray level of pixel before gamma correction (rounded to the nearest integer)?

EX6: Show the relationship between GBR and XYZ.



Challenging question (won't be marked):
A camera's CCD sensor may not be perfect in light/color sensing, which is quite normal for such advanced hardware. Instead of dumping it into the garbage can, a software/firmware remedy is often used.

Basically, its R becomes (real) (R+G)/2. Design a matrix that correctly converts its captured R, G, B to the real Y, U, V.