CS 4390: HW 3

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1 Data rate problem

It is desired to send a sequence of computer screen images over optical fiber. The screen is 3840×2160 pixels, each pixel being 24 bits. There are 60 screen images per second. What data rate is needed?

$$\text{Data Rate} = \frac{\text{Number of bits}}{\text{Bits per second}}$$

To find the bits per second quantity, first calculate the number of bits in an image. There are $24 \text{ bits} \cdot (3840 \times 2160) = 199{,}065{,}600$ bits per image.

Transmitting 60 images per second gives a data rate of data rate is $60 \cdot 199,065,600 = 1.194 \cdot 10^{10}$ bits / second.

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