ASSIGNMENT-06(C)

8.3 An amateur photographer chances upon a bank robbery. As the robbers' van speeds past him he takes a photograph of the side of the van. Unfortunately, the photograph is blurred because he forgot to "pan" with the moving van, and the sign on the van cannot be read. Suggest a method for restoring the image. What blurring function should be used? Can it be estimated from the image itself?

Ans. Wiener Filtering is an example of a blurring function that can be used for this. It is still necessary to calculate the ratio. It is possible to calculate the value depending on the blur distance in one direction.

8.4 Consider the problem of image blurring due to uniform acceleration in the x direction. If the image is at rest at position x0 at time t = 0 and accelerates with a uniform acceleration a, then its position at time t = T is given by x = x0 + (1/2) aT 2 . Find the blurring function. (Assume that the shutter opening and closing times are negligible.)

Ans.

$$-\int_0^{\sqrt{T a} u t} \sin(t^2)\, dt$$

8.5 You are working with a noisy video camera and digitizer and observe that the standard deviation of the noise is about twelve gray levels. You have detail in the image which requires better than five gray levels of precision to be sure of resolving it. How many images would you need to average to see this detail?

Ans. Found by sqrt(n) so 12/5 = sqrt(n) Get around 5.76 which can be rounded up to 6 images.