

Pop Quiz 2 [10 mins]

Name:

Student ID:

1. [2] Let us consider a signal $x(t)$. Consider the operation $\frac{1}{2}(x(t)*\delta(t) + x(t)*\delta(t-1))$. This is equivalent to
- low pass filtering of x
 - high pass filtering of x
 - band pass filtering of x

Note that the equation is in essence a 1D box filter of size 2. Therefore it is a LPF.

2. [1] Laplacian pyramid provides
- low pass filtering
 - high pass filtering
 - band pass filtering
3. [1+1] Down sampling an image (choosing a subset of its samples)
- would result in
 - Aliasing
 - Low Pass filtering
 - High Pass filtering
 - And can be avoided by
 - Aliasing
 - Low Pass filtering
 - High Pass filtering
4. [1] Laplacian operator computes the
- Gradient at a pixel
 - Curvature at a pixel
 - Zero crossing at a pixel
5. [1+3] We would like search parabolas of the form $(x-h)^2 = 4(y-k)$ in an edge image.
- The dimension of the Hough space is
 - 1
 - 2
 - 3
 - A parabola in the edge image space represents in Hough space

- A line
- A circle
- A parabola

Considering x and y as constants, the equation takes the form of $h^2 + Ah + Bk + C = 0$ where $A = -2x$, $B = 4$, and $C = x^2 - 4y$ are constants. This is the equation of a 2D parabola.