HOME TASK

Digital Image Processing

Submission Deadline: Syndicate A – At start of lab on 11th April 2017

Syndicate B – At start of lab on 12th April 2017

Edge Detection:

Edge detection can be very useful in image processing. By taking into account the magnitude and phase of different of the edges, the different edges can be filtered out i.e. edges with a certain magnitude or a certain phase can be removed from the image or vice versa.

The **Magnitude** and **Gradient** can be computed as follows:

$$Magnitude = \sqrt{(Sobel_x)^2 + (Sobel_y)^2}$$

$$Phase = \tan^{-1}\left(\frac{Sobel_y}{Sobel_x}\right)$$

Where Sobelx is the Horizontal Sobel and Sobely is the Vertical Sobel. Magnitude is obtained by adding the filtered results of both Horizontal Sobel and Vertical Sobel.

Tasks:

Compute the **magnitude** and the **phase** of the image given below. Then show the edges following a certain threshold of phase and magnitude: