# Concordia University
## Department of Computer Science & Software Engineering

### COMP 478/6771 Image Processing

Assignment 3
Due Date: November 6, 2017

1. Given a 3 by 3 spatial mask that averages the four closest neighbours of a point ($x$, $y$) but excludes the point itself from the average. Find the equivalent filter $H(u,v)$ in the frequency domain.

2. To approximate the first derivatives in 2D one can compute the differences: $f(x,y) - f(x-1,y)$ *and* $f(x,y) - f(x,y-1)$. Find the equivalent filter $H(u,v)$ in the frequency domain. Is this filter a low-pass or a high-pass? Justify your answer.

3. Do problem 4.39 on page 310 of the 3rd Ed. Gonzalez and Woods or problem 4.63 on page 361 of the 4th Edition.

4. Download the image from the course webpage then apply:

   a) Sobel edge detector
   b) Canny edge detector

   for edge detection. Submit your Matlab program and resulting images and compare the results.