

# CSC 292/572 Mobile Visual Computing, Fall 2022

## Programming Assignment 1

**Due on 11:30 AM Sept. 30**

### Introduction

This programming assignment asks you to implement 2D image convolution. The actual implementation shouldn't take you more than 20 lines of code. The start file is available at this Google Drive [link](#).

### Getting Started

This assignment will be done in Python. `conv.py` is the single file that contains all the code. The comments in the file should be self-explanatory. Here are a few things to note.

1. The function `conv2d` is the only place you can and should modify. Do not touch anything else!
2. We have cooked two convolution kernels/filters for you, one for blurring and the other for sharpening. Your job is to implement the actual convolution.
3. Run the code with `python conv2d`. If some packages are missing, install them first.
4. Running the code might take some time, since convolution is a heavy computation. Eventually you will see a window popping up. The window will show 2x3 images. The first column is the original image and its spectrum. The second column should be the blurred image and its spectrum. The last column should be the sharpened image and its spectrum. Before any modification to the code, all three columns are the same. You can visually inspect the images to see if your implementation makes sense.
5. You CANNOT use any other external library to implement convolution.

### What and how to submit

You need to submit only the `conv.py` file on Blackboard. Running the code will generate two files, “`blur.csv`” and “`sharpen.csv`”. You don't need to upload those files. But our grading script will compare the content in those files with our “ground truth”.

### Grading scheme

The code reads the `fig.jpg` file provided in the kit. You can certainly play with other images if you want, but our grading will be based on that image. Similarly, you can play with other convolution kernels, but our grading will be based only on the two provided in the code.

You will get full scores if the output matches our ground truth. If not, we will examine your code and decide on a case by case basis how much partial credit you will get.

Have fun!