## Convolution

This programming assignment requires you to write a code for convolution and test it on a simple artificial image.

Recommended programming language is Python on the Colab platform. The students are free to code in C/C++ or Java also.

**Suggested steps:**

1. Create a chessboard image of dimension 1024 x 1024, alternate squares of black (8) and white (8) along the rows and columns.
2. Define Horizontal and Vertical Sobel filters as 2D arrays.
3. Write code for convolution – **Do not use library routine**
4. Test your convolution code with the Sobel filters on the chessboard image. The outputs should be horizontal and vertical lines.

**Notes:**

1. There are some intricacies in writing convolution code, which you will discover during this assignment.
2. A code template in Colab/Python is available on this link. Students are advised to copy the template and expand on it [please acknowledge]. No such template is available for other platforms. Students may write their own code from scratch also.
3. The code should be adequately commented and comprehensible. Optimizations in the convolution code will be appreciated.

**Deliverables:**

1. A document [pdf only] comprising the following to be submitted
    a. The filename should be in the format **Assignment-1-<your name>-<your roll number>**
    b. The completed code on Colab platform [provide link and access privilege] / complete readable and executable code file for any other platform.]
    c. The results (screenshots).

**Important:**

1. You must submit before the deadline. Late submissions will not be reviewed.
2. Deliverables must be prepared first-time-right. Check all entries, access privileges, etc. before submission. It may not be possible for the instructor to follow-up and solicit resubmission.