

# Lab 1 Assignment:

## Introduction to Computer Vision with OpenCV

This OpenCV lab introduces linear (Box, Gaussian) and non-linear (Median, Bilateral, Morphological) filters through theory, shape demos, comprehensive comparisons, and an image challenge where you upload any photo, test five strategies, rank by PSNR, and analyze results.

**File:** Extract `OpenCV_101.zip` to get `OpenCV_101.ipynb`

**Task:** Complete the interactive Colab notebook to learn about image filtering:

1. **Run demos:** Linear filters (Box/Gaussian) on geometric shapes + Gaussian noise
2. **Non-linear filters:** Median/Bilateral/Morphological on salt-and-pepper noise
3. **Comprehensive comparison:** All filters side-by-side (Gaussian vs salt-pepper noise)
4. **Exercise:** Upload any image → test 5 filter strategies → get automatic PSNR rankings
5. **Analysis:** Fill template explaining why YOUR #1 filter won (theory connection)

### Submission:

- Platform: Connect UIR
- File → Print → Save as PDF
- Name: YourName\_ID\_FiltersLab.pdf