

# COMP 478/6771 course planning - Fall 2023

**Instructor: Prof. Yiming Xiao**

*\* The course planning can be subject to changes.*

Week 1: Sep 5 ~ Sep 10

***Introduction to Image processing***

Tutorial1: Introduction to MATLAB

Week 2: Sep 11 ~ Sep 17

***Review of matrix, vectors, probability theory, and Linear system***

Tutorial2: Introduction to MATLAB image processing toolbox

Week 3: Sep 18 ~ Sep 24

***Image enhancement I: pixel-wise operation***

**Assignment 1 (due Oct 3)**

Tutorial3: Image manipulation and histogram operation; *spatial filtering (smoothing)*

Week 4: Sep 25 ~ Oct 1

***\*Image enhancement II: image filtering***

Tutorial4: spatial filtering (sharpening & edge detection)

Week 5: Oct 2 ~ Oct 8

***\*Image transformation in 2D: Fourier transformation***

**Assignment 2 (due Oct 17)**

Tutorial5: Fourier transformation

***Course project announcement***

Week 6: Oct 9 ~ Oct 15

***Thanksgiving and midterm break (No class)***

Week 7: Oct 16 ~ Oct 22

***\*Filtering in frequency domain: homomorphic filtering, image reconstruction***

Tutorial6: Frequency domain filtering

Week 8: Oct 23 ~ Oct 29

***Midterm exam***

Tutorial7: review & exercise

***Submission of project proposals due for approval if different from listed ones***

Week 9: Oct 30 ~ Nov 5

***\*Image restoration: Denoising, sharpening, deblurring***

**Assignment 3 (due Nov 14)**

Tutorial8: image restoration

Week 10: Nov 6 ~ Nov 12

***\*Edge detection***

Tutorial9: edge detection

Week 11: Nov 13 ~ Nov 19

***\*Hough transformation, edge, otsu's method***

**Assignment 4 (due Dec 5)**

Tutorial10: edge and line detection

Week 12: Nov 20 ~ Nov 26

***\*Morphological operations***

Tutorial11: Hough transform and morphological operation

Week 13: No 27 ~ Dec 3

***\*Wavelet transformation***

Tutorial12: wavelet transformation

***Course project due Dec 5, 2022***

**\*\*\*Final exams\*\*\***