

Welcome!

You are in the class of

Image Processing

Note:

This is an English-Medium Course.

Basic Information

- Instructor: Tsaipei Wang
 - Office: EC709
 - Phone: 56689
 - E-mail: wangts@cs.nctu.edu.tw
 - Office hours: 5DX, or by appointment
- TA office: EC031; phone: 56681
- Textbook: "Digital Image Processing" by Gonzalez and Woods (4th edition)
- Web site: Use e-Campus (e3new.nctu.edu.tw) to get the slides and announcements, and to submit assignments.

Requirements / Grading

- Exams (x2, 50% total): 11/6 and 12/25
- Individual projects (x3, 40% total)
 - Programming environment: C/C++, Python, or Matlab
 - Only limited use of libraries (e.g., opencv) or toolboxes allowed. Mostly, you need to implement image processing functionalities by yourself.
 - Each project requires a written report of your experiments.
 - Expected due dates: 10/16, 11/13, 12/11
- Group presentation (10%): 12/15 and 12/18
 - Introduction of a topic in image processing not covered in the lectures.
 - An oral presentation and a written report required.
 - Contents will be included in the final exam.

Overview

What we teach in this class:

- Image representation (binary, gray-scale, color)
- Image enhancement
- Spatial-domain and frequency-domain processing
- Image segmentation
- Image compression and coding
- Other topics: wavelets, morphology, etc.

Topics for "high-level" image processing tasks, such as image classification or video processing, are likely covered in courses like Computer Vision.

Prerequisites

- Programming
- Linear Algebra
 - Representation of images as matrices
 - Spatial and geometric transforms
 - Topics that use basis functions (frequency-domain processing, wavelets, etc.)
- Probability
 - Representation of image intensities as distributions
 - Concepts used in compression / coding
- Set theory
 - Concepts related to image regions; morphology