



## Principles and Applications of Digital Image Processing

【 Fall, 2023 】

### Term Project

#### **Term Project Objectives:**

The objective of the term project is to present a specific application of image processing techniques to a practical problem based on what you have learned from this course and articles in the literature. Emphasis is placed on the real implementation of the computer program to achieve objective of the project. You may utilize software library or packages, such as OpenCV, MATLAB, etc. for the project. You are also required to analyze your results and present your results in a formal academic format.

#### **Possible Topics:**

The following topics are listed as examples. You are not limited with these topics. Choose your term project topic appropriately so that the practical problem you will solve is not too simple as well as not too difficult. Try to find a balance between your time constraint and the depth of your research topic.

- Applications of Fourier transform wavelet transform
- Image texture analysis and classification
- Geometric transformation
- Image object segmentation and analysis
- Image coding and encoding
- Applications of Hough transform
- Geometric measurement using image processing techniques
- Face detection and recognition
- Template matching applications
- Object tracking and motion estimation
- Image panoramas
- Image restoration

#### **Final Report:**

Your final report should be in the form of a conference paper, with a maximum of twenty pages. Use the format of the SPIE (The International Society for Optical Engineering) conference paper.



Microsoft Word templates can be found at <http://spie.org/x14101.xml> and our NTU COOL course website. You must write the report yourself. Plagiarism can lead to a failing score of the project, the course, or worse.

Submit your final report together with your executable computer programs to the AUTOLAB course website. Although optional, you may also consider submitting a short video clip to better demonstrate your project result.

**Tentative Schedule:**

Nov. 22	Submission of project proposal (1-2 pages). Project proposal should include project topic, objectives, research methods, and references.
Dec. 13	Submission of the project progress report (Homework 7)
Dec. 27	Submission of final report