Advanced Lectures on Image Signal Processing (画像信号処理特論)

Advanced Lectures on Communication and Image Processing (通信・画像信号処理工学特論)

2020年度

高橋桂太

Summary

- Joint course of
  - Advanced Lectures on Image Signal Processing
    （画像信号処理特論，情報・通信工学専攻）
  - Advanced Lectures on Communication and Image Processing
    （通信・画像信号処理工学特論，G30 Program）
- Period
  - Mon 13:00-14:30 @ ~~IB-North10F Sate-lab~~ online
- Contact
  - Keita Takahashi (Associate Professor)
    - keita.takahashi@nagoya-u.jp

Summary

- All materials provided in English
- Programming exercises in C++
  - Departure from one way teaching that is boring both for students and teachers
  - Aimed at true understanding that actually works
  - Enjoyable exercise with visual feedback
- Evaluation
  - Report only (no attendance recorded)
  - How much you learned from this course evaluated
  - Reasonable degree of completion of the exercises required

Website

- Go to the webpage of this course
  - http://www.fujii.nuee.nagoya-u.ac.jp/~takahasi/Lectures/IP/index.html
  - username: student password: ip2020
- Download
  - Lecture slides
  - Image data
  - Irfanview (an image viewer)
  - Header file (myImageIO.h)
  - Sample source files

Exercises

- Regulations
  - C++ without external libraries for image processing
  - Basic I/O interfaces provided.
- Use an equipped computer in this room
  - Login with your Nagoya Univ. ID and password
  - Cygwin g++, Text editor, irfanview
  - Very slow computer, narrow workspace, frustrating software environment
- Or bring your own laptop
  - Software environment at your own responsibility

Report

- Format
  - Name and student ID on the 1st page
  - A4 papers, both side printed, stapled at the top-left corner (electronic submission is not accepted!)
  - Up to 10 pages for Dept. Inform. & Commun.
  - Up to 5 pages for G30 program
  - Japanese or English
- Contents
  - Images produced by your own programs
  - Whatever your learned from the exercises
  - Source codes are unnecessary

Schedule (Dept. Info. & Commun.)

Date	Subject	
4/13	Introduction	
4/20	#1 “Hello World!”	
4/27	#2 Image filtering	
5/11	#3 Binarization and error diffusion	
5/18	#4 Image Histogram	
5/25	#5 Geometric transformation	
6/1	#6 Frequency Analysis	
6/8	#7 Advanced Image filters	
6/15	#8 JPEG compression (1)	
6/22	#9 JPEG compression (2)	
6/29	#10 Image deconvolution (1)	
7/6	#11 Image deconvolution (2)	
7/13	Q&A, report preparation	
7/20	Report collection, inquiry	Report deadline is firm

Schedule (G30 Program)

Date	Subject	
4/13	Introduction	
4/20	#1 “Hello World!”	
4/27	#2 Image filtering	
5/11	#3 Binarization and error diffusion	
5/18	#4 Image Histogram	
5/25	#5 Geometric transformation	
6/1	Report collection (with oral exam)	Report deadline is firm
6/8		
6/15		
6/22		
6/29		
7/6		
7/13		
7/20		

Communication Engineering

Attended by Prof. Katayama & Prof. Yamazato