51281 : 휴먼 인터페이스 미디어 (Human Interface Media)

Fall 2020, Dept. of Computer Science and Engineering

Lecture: Class 1: Fri 1~3 Room: 208-213 **Class 2:** Thu 9~11 Room: 310-417

Office Hour: Mon 1:00 – 2:00 pm or by appointment, 208-421

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Course Web: http://eclass.cau.ac.kr

Course Description:

This course is about understanding human perceptual and cognitive abilities and essential factors to be a media to stimuli the human perception mechanism. Especially this courses focuses on human visual and auditory perception mechanism and how the video and audio information can be represented in data and transferred in media devices to properly simulate human perception system. Principle characteristics of interface media between the computer and the human will be covered. Principles digital descriptions of image and sound, algorithms of compression using limitation of human perception system are included in this course.

Course Goal:

The goals for the course are for you to learn the principles of human perception and cognition system and fundamental mathematics, properties and digital representation of visual and auditory signals. The aim of the course is to understand fundamentals of media for human interface design.

Student Achievement:

By the end of this course, you will understand the mechanism of human perception and problems and solutions facing visual and auditory media processing, in the area of user interfaces, information retrieval, data structure and algorithms, and communications.

Text: No textbook, Reading materials are provided during the class (hands out or URLs are provided).

Pre-requisites:

- Background on Mathematics especially, Fourier Transform, Probability and Statistics.
- Basic skills on C or C++ programming and handling S/W developing tools

Lecture Calendar:

Week	Topics	Class Date	
1	Course Introduction & Human Perception System	9/1, 4	
2	Auditory perception	9/8, 11	
3	Digital Representation of Audio Information	9/15, 18	
4	Spectral Representation of Audio Signal - 1-D Fourier Transform	9/22 25	
5	Spectral Decomposition of Digital Audio Data – DFT/FFT (1/2)	9/29 10/2	
6	Spectral Decomposition of Digital Audio Data – DFT/FFT (2/2)	10/6, 9	
7	Psychoacoustic Data Compression - MP3 Standard	10/13,16	
8	Midterm Exam.	10/20	
9	Human Visual System	10/27, 30	
10	Digital Representation of Visual Information	11/3, 6	
11	Color Perception & Representation of Color	11/10, 13	
12	Spectral Decomposition of Visual Data – DCT	11/17, 20	
13	Psychovisual Data Compression - JPEG Standard	11/24, 27	
14	Digital Representation of Motion Pictures	12/1, 4	
15	Psychovisual Data Compression - MPEG Standard	12/8, 11	
16	Final Exam	12/15	

Evaluation: homework (30%) midterm exam (30%) final exam (40%)

Evaluation Policy:

Missing of mid-term or final exam will directly result the 'F' grade without considering any other factors. This is a firm policy. Do not expect any special treatment.