Multimedia Information Processing

1. Course Description

This course provides you the knowledge about multimedia computing technology which integrates various media such as image, sound, speech, and text. You will learn basic method, theory, and element technology to handle sound, speech, and text with computer. Moreover, you will learn basic method and theory of pattern recognition for handling these element media technologies.

You will deepen your understanding of the general principles of the multimedia processing, by actually applying some media processing algorithms to a media to compare and confirm those effects.

The course includes lectures, assignments, and final written examination.

This course follows DP4M in the diplomat policies of the faculty.

2. Course Objectives

By the end of this course, you will be able to:

(1) understand and explain the fundamental principle and the algorithm of some simple pattern recognition algorithms

(2) understand and explain the Image media processing technology

(3) understand and explain the sound and speech media processing technology

(4) understand and explain the sound and text media processing technology

3. Grading Policy

Grade will be computed as follows:
- Weekly assignments 50%
- Final examination 50%
You can receive a credit if you obtain 60% and above.

4. Textbook and Reference

Textbook
尾内理紀夫　マルチメディアコンピューティング　コロナ社 (ISBN: 978-4-339-02434-0)

Reference
榎本美香, 飯田仁, 相川清明　マルチモーダルインタラクション　コロナ社 (ISBN: 978-4-339-02784-6)
中川聖一（編）　音声言語処理と自然言語処理　コロナ社 (ISBN: 978-4-339-02888-1)
板橋秀一　音声工学　森北出版 (ISBN: 978-4-627-82811-7)

5. Requirements(Assignments)

Before class:
You should summarize a note named "worksheet" by reading the textbook or additional texts on LMS, and submit it at the beginning of each class.

After class:
At the end of each class, problem sets will be provided over LMS. Solve problem sets for each class and submit them by the deadline.

6. Note

7. Schedule

[1]	guidance for this course. What is multimedia?
[2]	Pattern recognition (1): Bayes decision rule
[3]	Pattern recognition (2): Simple perceptron
[4]	Pattern recognition (3): Support Vector Machine
[5]	Pattern recognition (4): Unsupervised learning
[6]	Speech processing (1): Foundation of sound, Fourier transform
[7]	Speech processing (2): Spectral analysis for speech
[8]	Speech processing (3): Acoustic features
[9]	Speech processing (4): Acoustic analysis for speech recognition
[10]	Speech processing (5): Acoustic analysis for speech synthesis
[11]	Text processing (1): Morphological analysis
[12]	Text processing (2): N-gram
[13]	Text processing (3): Term weighting
[14]	Text processing (4): Information retrieval
[15]	Review and summary