Multimedia in Social Networks (MM)

Place: Room 107, New Building, IIS, AS / Delta Building, NTHU

Time: Wed, 09:00-12:00

Chair: Dr. Jun-Cheng Chen (Chair)
       Dr. Chia-Wen Lin
       Dr. Wen-Hung Liao
       Dr. Yan-Tsung Peng
       Dr. Li Su

1. Introduction to Multimedia
   1.1. What is Multimedia?
   1.2. Overview of Multimedia Applications
   1.3. Multimedia Research Resources

2. Multimedia Basics
   2.1. Graphics and Image Data Representations
   2.2. Color in Image and Video
   2.3. Fundamental Concepts in Video
   2.4. Basics of Digital Audio

3. Machine Learning and Deep Learning in Social Multimedia Analytics
   3.1. Machine learning Basics
   3.2. Deep Learning Basics
   3.3. Unsupervised/Semi-supervised/Supervised Learning, etc.

4. Multimedia Processing & Coding
   4.1. Video coding fundamentals
   4.2. Lossless Compression & Lossy Compression
   4.3. Transform Coding
   4.4. Motion Compensated Predictive Coding
   4.5. Multimedia Coding Standards
       4.5.1. JPEG, JPEG-2000
       4.5.2. H.261, H.263, MPEG-1, MPEG-2, MPEG-4, and H.264

5. Audio Information Analysis
   5.1. Audio Signal Processing fundamentals
   5.2. Deep Learning for Audio Multimedia Analysis

6. Social Network Basics
   6.1. An Introduction to Social Networks
   6.2. Properties and Models of Social Networks
   6.3. Centrality Analysis and Community Detection
   6.4. Information Diffusion in Social Networks
   6.5. Social Multimedia Analytics
       6.5.1. Sentiment, Opinion, Locations, and Multimedia
       6.5.2 Search and Recommendation in Social Media

7. Advanced Multimedia and Image Processing
   7.1. Image Manipulation Techniques
   7.2. Interactive Multimedia Editing

Textbook/Reference:
11. Selected research papers.

Office hours: by appointment
Grades:
- Exam 50%
- Final Project 50%

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<th>Topics/Brief Description</th>
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<td>2021/02/24</td>
<td>Introduction to Multimedia</td>
<td>Jun-Cheng Chen</td>
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<td>2021/03/03</td>
<td>Multimedia Basics (I)</td>
<td>Wen-Hung Liao</td>
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<td>Multimedia Basics (II)</td>
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<td>Audio Analysis in Multimedia (I)</td>
<td>Li Su</td>
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<td>Fundamental of Deep Learning (I)</td>
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<td>2021/04/07</td>
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<td>Final-Project Proposal Explanation (Milestone I)</td>
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<td>2021/04/14</td>
<td>Visual Content Processing &amp; Coding (I)</td>
<td>Chia-Wen Lin</td>
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<td>Image/Video Coding Standards</td>
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<td>Final-Project Proposal Presentation (Milestone II)</td>
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<td>2021/05/12</td>
<td>Midterm Exam</td>
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<td>2021/05/19</td>
<td>Deep Learning for Image Processing Applications (I)</td>
<td>Yan-Tsung Peng</td>
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<td>2021/05/26</td>
<td>Deep Learning for Image Processing Applications (II)</td>
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<td>Social Multimedia and Related Applications</td>
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<td>Final-Project Clinic (Milestone III)</td>
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<td>17</td>
<td>2021/06/16</td>
<td>Polishing Up your Demo No Class</td>
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