Multimedia in Social Networks (MM)

Place: Room 107, New Building, IIS, AS / R601, Delta Building, NTHU

Time: Mon, 14:00-17:00

Chair: Dr. Wen-Huang Cheng
       Dr. Hwann-Tzong Chen
       Dr. Wen-Hung Liao
       Dr. Chia-Wen Lin
       Dr. Yi-Hsuan Yang

Outline:
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. Multimedia Processing & Coding
   3.1. Video coding fundamentals
   3.2. Lossless Compression & Lossy Compression
   3.3. Transform Coding
   3.4. Motion Compensated Predictive Coding
4. Multimedia Coding Standards
   4.1. JPEG, JPEG-2000
   4.2. H.261, H.263, MPEG-1, MPEG-2, MPEG-4, and H.264
5. Social Network Basics
   5.1. An Introduction to Social Networks
   5.2. Properties and Models of Social Networks
   5.3. Centrality Analysis and Community Detection
   5.4. Information Diffusion in Social Networks
6. Social Multimedia Analytics
   6.1. Sentiment, Opinion, Locations, and Multimedia
   6.2. Search and Recommendation in Social Media
7. Machine Learning in Social Multimedia Analytics
   7.1. Unsupervised Learning
   7.2. Discriminative Models
   7.3. Generative Graphical Models
8. Advanced Multimedia Processing
   8.1. Image Manipulation Techniques
   8.2. Interactive Multimedia Editing

Textbook/Reference:
11. Selected research papers.

Office hours: by appointment
Grades:
- Class Participation (10%)
- Homework Assignments: (20%)
- Midterm Exam (30%)
- Final Project (40%)
  - Proposal: 10%
  - Demo: 20%
  - Report: 10%

| Week | Date       | Topics/Brief Description                                                      | Lecturers                  |
|------|------------|=============================================================================|----------------------------|
| 1    | 2018/02/26 | Introduction to Multimedia                                                  | Wen-Huang Cheng            |
| 2    | 2018/03/05 | Multimedia Basics (I)                                                       | Wen-Hung Liao              |
| 3    | 2018/03/12 | Multimedia Basics (II)                                                      | Wen-Hung Liao              |
| 4    | 2018/03/19 | Visual Content Processing & Coding (I)                                    | Chia-Wen Lin @ NTHU        |
| 5    | 2018/03/26 | Visual Content Processing & Coding (II)                                    | Chia-Wen Lin @ NTHU        |
| 6    | 2018/04/02 | Image/Video Coding Standards                                               | Chia-Wen Lin @ NTHU        |
| 7    | 2018/04/09 | Audio/Music Analysis in Multimedia (I)                                     | Yi-Hsuan Yang              |
| 8    | 2018/04/16 | Audio/Music Analysis in Multimedia (II)                                    | Yi-Hsuan Yang              |
| 9    | 2018/04/23 | Midterm Exam                                                               |                            |
| 10   | 2018/04/30 | Final-Project Proposal Presentation Machine Learning in Social Multimedia Analytics | Wen-Huang Cheng            |
| 11   | 2018/05/07 | Social Multimedia Applications                                             | Wen-Huang Cheng            |
| 12   | 2018/05/14 | Multimedia Recommendation                                                  | Yi-Hsuan Yang              |
| 13   | 2018/05/21 | Advanced Multimedia Processing (I)                                         | Hwann-Tzong Chen @ NTHU    |
| 14   | 2018/05/28 | Advanced Multimedia Processing (II)                                        | Hwann-Tzong Chen @ NTHU    |
| 15   | 2018/06/04 | Advanced Multimedia Processing (III)                                       | Hwann-Tzong Chen @ NTHU    |
| 16   | 2018/06/11 | Polishing Up your Demo_No Class                                            |                            |
| 17   | 2018/06/?? | Final Project Demo and Presentation                                         |                            |