

Multimedia in Social Networks (MM)

Place: Room 108, Old Building, IIS, AS

Time: 09:00-12:00 Tue

Chair: Dr. Wen-Huang Cheng
Dr. Hwann-Tzong Chen
Dr. Cheng-Te Li
Dr. Wen-Hung Liao
Dr. Chia-Wen Lin

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
 - 6.3. User Understanding
 - 6.4 Using Social Multimedia for Prediction and Forecast
7. Advanced Multimedia Processing
 - 7.1. Image Manipulation Techniques
 - 7.2. Interactive Multimedia Editing

Textbook/Reference:

1. Ze-Nian Li, Mark S. Drew, and Jiangchuan Liu, *Fundamentals of Multimedia*, 2nd edition, Springer, 2014.
2. Gonzalez and Woods, *Digital Image Processing*, 3rd edition, Prentice Hall, 2008.
3. Christopher M. Bishop, *Pattern Recognition and Machine Learning*, Springer, 2007.
4. Richard Szeliski, *Computer Vision: Algorithms and Applications*, Springer, 2010.
5. Richard J. Radke, *Computer Vision for Visual Effects*, Cambridge University Press, 2012.
6. S. Wasserman and K. Faust, *Social Network Analysis: Methods and Applications*, Cambridge University Press, 1994.
7. R. A. Hanneman and M. Riddle, *Introduction to Social Network Methods*, University of California, 2005.
http://faculty.ucr.edu/~hanneman/nettext/Introduction_to_Social_Network_Methods.pdf
8. R. Zafarani, M. A. Abbasi, and H. Liu, *Social Media Mining: An Introduction*, Cambridge University Press, 2014.
9. Charu C. Aggarwal, *Social Network Data Analytics*, Springer, 2011.
10. W. Chen, L. V.S. Lakshmanan, and C. Castillo, *Information and Influence Propagation in Social Networks*, Morgan & Claypool Publishers, 2013.
11. Selected research papers.

Office hours: by appointment

TA : Fredrick Mzee Awuor

Grades:

- Class Participation (10%)
- Homework Assignments: (20%)
- Midterm Exam (30%)
- Final Project (40%)
 - Proposal: 10%
 - Demo: 20%
 - Report: 10%
 - Bonus: 3 points (for the best three demos)

Week	Date	Topics/Brief Description	Lecturers
1	2016/02/16	Introduction to Multimedia	Cheng-Te Li
2	2016/02/23	Multimedia Basics (I)	Wen-Hung Liao
3	2016/03/01	Multimedia Basics (II)	Wen-Hung Liao
4	2016/03/08	Multimedia Processing & Coding (I)	Chia-Wen Lin
5	2016/03/15	Multimedia Processing & Coding (II)	Chia-Wen Lin
6	2016/03/22	(Rescheduled)	
7	2016/03/29	Social Network Basics (I)	Cheng-Te Li
8	2016/04/06 1400-1700	Social Network Basics (II)	Cheng-Te Li
9	2016/04/12	Midterm Exam	
10	2016/04/19	Machine Learning in Social Multimedia Analytics	Wen-Hung Liao
11	2016/04/26	Social Multimedia Analytics (I)	Wen-Huang Cheng
12	2016/05/03	Final-Project Proposal Presentation Social Multimedia Analytics (II)	Wen-Huang Cheng
13	2016/05/10	Social Multimedia Analytics (III)	Cheng-Te Li
14	2016/05/17	Advanced Multimedia Processing (I)	Hwann-Tzong Chen
15	2016/05/24	Advanced Multimedia Processing (II)	Hwann-Tzong Chen
16	2016/05/31	Advanced Multimedia Processing (III)	Hwann-Tzong Chen
17	2016/06/07	Special Topics	Wen-Huang Cheng
18	2016/06/14	Review Week (No class)	
19	2016/06/22(Wed)	Final Project Demo and Presentation @ TUNA	MM Faculty