Natural Language Processing and Information Retrieval with Applications in Social Networks, Fall 2014

Place: Room 107, New Building Time : 14:00-17:00 on Wednesdays
Chair: Dr Hsu Wen Lien
Outline: This course first quickly goes through the common background required in studying various NLP and IR techniques. Afterwards, algorithms for performing IR and NLP are introduced, and their associated applications then follow each of them respectively. Last, this course is concluded with three selected topics in social networks (which are: Opinion Mining, Blog and Forum Emotion Detection, and Intent Prediction).
Office hours: by appointment Grades: (Midterm exam 50%. Final exam 50%.)

Week	Date	Topics/Brief Description	Lecturers
1	2014/09/17	Introduction & Overview of IR and NLP	Su Keh Yih
2	2014/09/24	Background (I)[1]:	Liu Chao Lin
3	2014/10/01	Background (II)[2]:	Liu Chao Lin
4	2014/10/08	Term Weighting and Vector Space Model	Ku Lun Wei
5	2014/10/15	Relevance Feedback and Query Expansion	Ku Lun Wei
6	2014/10/22	Text Classification and Naïve Bayes	Wang Hsin Min
7	2014/10/29	Flat and Hierarchical Clustering	Wang Hsin Min
8	2014/11/05	IR Applications	Jason Chang
9	2014/11/12	Tokenization[3] and Part-of-Speech Tagging	Liu Chao Lin
10	2014/11/19	Midterm Exam	
11	2014/11/26	Statistical Parsing, Dependency Parsing	Su Keh Yih
12	2014/12/03	Word Sense Disambiguation and Semantic Role Labeling	Su Keh Yih
13	2014/12/10	Semantic Representation and Computational Semantics	Jason Chang
14	2014/12/17	Natural Language Understanding[4]	Su Keh Yih
15	2014/12/24	NLP Applications	Jason Chang
16	2015/12/31	Selected Topics in Social Networks	Ku Lun Wei[5]
17	2015/01/07	Review Week	
18	2015/01/14	Final Exam	

[1] Background (I) briefly introduces: Principal Component Analysis, Probability, Statistics, Stochastic Process (Markov), Information Theory (Cross Entropy), Formal Languages and Automata Theory (Context Free Grammar), Language Model (Smoothing), and Search (Dynamic Programming and A*). Please illustrate with NLP examples.
[2] Background (II) briefly introduces: Pattern Recognition, Optimization (Viterbi/EM, MERT/MIRA), and Machine Learning (SVM, MaxEntropy). Please illustrate with NLP examples.
[3] Tokenization includes: Stemming, Word Segmentation, Named Entity Recognition, Compound and Idiom Recognition
[4] NLU includes: Anaphora Resolution, Co-reference Resolution, Discourse Parsing, Reasoning, Dialog Management
[5] She will cover following topics: Opinion Mining, Blog and Forum Emotion Detection, and Intent Prediction.