Special Topics on Spoken Language Processing

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Course Contents

- In this course, we will extensively survey and discuss all topics related to recent advances in spoken language processing, organization and its applications. Topics including,
  - Large vocabulary continuous speech recognition: feature extraction, acoustic modeling, language modeling and search algorithms
  - Speech information retrieval: audio indexing, retrieval modeling, summarization and organization techniques
  - Spoken dialogues: speech/language understanding, dialogue management, language generation, etc.
  - Speech translation: translation modeling, parallel corpus analysis, lexicon design
  - Evaluation metrics: subjective and objective assessments for technologies developed for the above topics

Textbooks

- Textbooks:
  - W. Chou,. B.H. Juang. Pattern Recognition in Speech and Language Processing. CRC Press. (February 26, 2003)
  - X. Huang, A. Acero, H. Hon. Spoken Language Processing: A Guide to Theory, Algorithm and System Development. Prentice Hall. (April 25, 2001)
  - W. B. Croft and J. Lafferty (Editors). Language Modeling for Information Retrieval. Kluwer-Academic Publishers. (July 2003)

References

- Journals
  - IEEE Transactions on Speech and Audio Processing
  - Computer Speech and Language
  - ACM Transactions on Asian Language Information Processing
  - ACM Transactions on Speech and Language Processing
  - ...

- Conferences
  - IEEE Int. Conf. Acoustics, Speech, Signal processing (ICASSP)
  - Int. Conf. on Spoken Language Processing (ICSLP)
  - European Conference on Speech Communication and Technology (Eurospeech)
  - ACM Annual International Conference on Research and Development in Information Retrieval (SIGIR)
  - ACM Conference on Information Knowledge Management (CIKM)
  - ...

Tentative Schedule

Topic List and Schedule

2/21	Course Overview SP: A Decision Theoretic Formulation for Robust Automatic Speech Recognition (Chou & Juang, Ch. 3)
2/28	**Break**
3/7	IR: A Survey on Web Information Retrieval Technologies
3/14	SP: Machine Translation Using Statistical Modeling (Chou & Juang, Ch. 11)
3/21	SP: Latent Semantic Entropy Principle for Language Modeling
3/28	SP: Missing Feature Approaches for Robust Speech Recognition
4/4	**Break**
4/11	SP: Confidence Measures for Large Vocabulary Continuous Speech Recognition
4/19	IR: Speech Summarization and Organization Techniques
4/26	SP: Discriminative Training Approaches for Continuous Speech Recognition
5/3	SP: Language Model Adaptation
5/10	SP: MLP-based Speech Feature Extraction
5/17	**ICASSP2006**
5/24	
5/31	
6/7	