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ACADEMIC GOAL AND RESEARCH INTEREST

PhD in the field of multimedia processing and communication (started from 2006 via a direct Ph.D program, expected in Jan. 2010). Thesis Advisor: Homer. H. Chen, Ph.D.

My research interests are multimedia information retrieval and indexing, music signal processing, machine learning and affective computing.

I am looking for a post-doc position that starts from Jul. 2011.

EDUCATION

Bachelor of Science, Electrical Engineering, National Taiwan University, 2006.

Overall grade average: **90.11** overall GPA-**3.95** / 4.00, Final rank: **21/176**.

HONORS

1. 2009 **Microsoft Research Asia Fellowship 2008**.
2. 2009 Sun Microsystems Student Travel Award to International Society for Music Information Retrieval (ISMIR).
3. 2009 Student travel grant to ACM International Conference on Information Retrieval (SIGIR).
4. 2008 **Third place in the Paper Contest of CML Workshop**, GINM, NTU.
5. 2007 **Third place in the 3rd NISSAN Design Award**.
6. 2008, 2007, 2006 **Class A Scholarship**, Graduate Institute of Communication Engineering, NTU.
7. 2006 **First** student to enroll in the PhD program of Graduate Institute of Communication Engineering, National Taiwan University, **directly from undergrad**.
8. 2006 Student travel grant to ACM International Conference on Multimedia (MM).
9. 2006 **Third place in the 4th System-On-Chip Innovation Game**, SOC center of NTU.
10. 2006 **First prize in the 15th Undergraduate Student Paper Contest**, EECS, Chinese Institute of Engineers.
11. 2005 **Undergraduate student special projection participation program** of National Science Council.
12. 2004 **Student exchange program** between Michigan State University (USA) and NTU.

PUBLICATIONS

Journal Papers

1. **Y.-H. Yang** and H.-H. Chen, "Predicting the distribution of perceived emotions of a music signal for content retrieval," to be submitted.
2. Y.-C. Lin, **Y.-H. Yang** and H.-H. Chen, "Exploiting genre for music emotion classification," to be submitted.
3. **Y.-H. Yang** and H.-H. Chen, "Ranking-based emotion recognition for music organization and retrieval," *IEEE Transactions on Audio, Speech, and Language Processing*, in revision.
4. **Y.-H. Yang**, W.-H. Hsu, and H.-H. Chen, "Online reranking via ordinal informative concepts for context fusion in concept detection and video search," *IEEE Transactions on Circuits and Systems for Video Technology*, accepted.
5. Y.-F Su, **Y.-H. Yang**, M.-T. Lu, and H.-H. Chen, "Smooth control of adaptive media playout for video streaming," *IEEE Transactions on Multimedia*, vol. 11, no. 7, pp. 1331–1339, Nov. 2009.
6. **Y.-H. Yang**, Y.-C. Lin, Y.-F Su, and H.-H. Chen, "A regression approach to music emotion recognition," *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 16, no. 2, pp. 448–457, Feb. 2008.

Conference Papers

7. **Y.-H. Yang**, Y.-C. Lin, A. Lee, and H.-H. Chen, "Improving musical concept detection by ordinal regression and context fusion," *Proc. ISMIR'09*, pp. 147–152.
8. M.-Y. Su, **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, "An integrated approach to music boundary detection," *Proc. ISMIR'09*, pp. 705–710.
9. L.-C. Hsieh, K.-T. Chen, **Y.-H. Yang**, and G.-L. Wu, "Canonical image selection and efficient image graph construction for large-scale Flickr photos," *Grand Challenge for ACM Multimedia'09*.
10. **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, "Personalized music emotion retrieval," *Proc. ACM SIGIR'09*, pp. 748–749.
11. **Y.-H. Yang** and H.-H. Chen, "Music emotion ranking," *Proc. ICASSP'09*, pp. 1657–1660.
12. **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, "Clustering for music search results," *Proc. ICME'09*.
13. Y.-C. Lin, **Y.-H. Yang**, and H.-H. Chen, "Exploiting genre for music emotion classification," *Proc. ICME'09*.
14. H.-T. Cheng, **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, "Multimodal structure segmentation and analysis of music using audio and textual information," *Proc. ISCAS'09*, pp. 1677–1680.
15. **Y.-H. Yang**, P.-T. Wu, C.-W. Lee, K.-H. Lin, W.-H. Hsu, and H.-H. Chen, "ContextSeer: Context search and recommendation at query time for shared consumer photos," *Proc. ACM MM'08*, full paper, pp. 199–208.
16. P.-T. Wu, **Y.-H. Yang**, and W.-H. Hsu, "Keyword-based concept search on consumer photos by web-based kernel function," *Proc. ACM MM'08*, short paper, pp. 651–654.
17. **Y.-H. Yang**, Y.-C. Lin, H.-T. Cheng, and H.-H. Chen, "Mr.Emo: Music retrieval in the emotion plane," *Proc. ACM MM'08*, technical demonstration, pp. 1003–1004.
18. T.-L. Wu, H.-K. Wang, C.-C. Ho, Y.-P. Lin, T.-T. Hu, M.-F. Weng, L.-W. Chan, C.-H. Yang, **Y.-H. Yang**, Y.-P. Hung, Y.-Y. Chuang, H.-H. Chen, H.-H. Chen, J.-H. Chen, and S.-K. Jeng, "Interactive content presenter based on expressed emotion and physiological feedback," *Proc. ACM MM'08*, technical demonstration, pp. 1009–1010.
19. **Y.-H. Yang**, Y.-C. Lin, H.-T. Cheng, I.-B. Liao, Yeh-Chin Ho, and H.-H. Chen, "Toward multi-modal music emotion classification," *Proc. PCM'08*, pp. 70–79.
20. H.-T. Cheng, **Y.-H. Yang**, Y.-C. Lin, I.-B. Liao, and H.-H. Chen, "Automatic chord recognition for music classification and retrieval," *Proc. ICME'08*, pp. 1505–1508.
21. **Y.-H. Yang** and W.-H. Hsu, "Video search reranking via online ordinal reranking," *Proc. ICME'08*.
22. M.-F. Weng, C.-K. Chen, **Y.-H. Yang**, R.-E. Fan, Y.-T. Hsieh, Y.-Y. Chunag, W.-H. Hsu, and C.-J. Lin, "The NTU toolkit and framework for high-level feature detection at TRECVID 2007," *NIST TRECVID Workshop 2007*.
23. C.-C. Ma, **Y.-H. Yang**, and W. Hsu, "Image thumbnailing via multi-view face detection and saliency analysis," *Proc. Conf. Visual Information Processing (VIP'07)*, 2007.
24. **Y.-H. Yang**, Y.-F. Su, Y.-C. Lin, and H.-H. Chen, "Music emotion recognition: The role of individuality," *Proc. ACM SIGMM Int. Workshop on Human-centered Multimedia 2007, in conjunction with ACM Multimedia (ACM MM/HCM'07)*, pp. 13–21.
25. **Y.-H. Yang**, Y.-C. Lin, Y.-F. Su, and H.-H. Chen, "Music emotion classification: A regression approach," *Proc. ICME'07*, pp. 208–211.
26. **Y.-H. Yang**, C.-C. Liu, and H.-H. Chen, "Music emotion classification: A fuzzy approach," *Proc. ACM MM'06*, pp. 81–84.
27. C.-C. Liu, **Y.-H. Yang**, P.-H. Wu, and H.-H. Chen, "Detecting and classifying emotion in popular music," *Proc. Joint Int. Conf. Information Sciences / Int. Conf. Computer Vision, Pattern Recognition and Image Processing 2006 (JCIS/CVPRIP'06)*, pp. 996–999.
28. **Y.-H. Yang**, M.-T. Lu, and H.-H. Chen, "Smooth playout control for video streaming over error-prone channels," *Proc. ISM'06*, pp. 415–418.

Local Conference Papers / E-Papers

29. **Y.-H. Yang** and H.-H. Chen, "Searching music in the emotion plane," IEEE MMTTC E-Letter, November issue, 2009 (**invited position paper**).
30. **Y.-H. Yang** and H.-H. Chen, "iMR: Interactive music recommendation via active interactive genetic algorithm," *Proc. WOCMAT'09*.

Patent

31. Y.-H. Yang et al, "A genre-based two-layer structure for music emotion classification," Taiwan pending.
32. **Y.-H. Yang** and H.-H. Chen, "Music retrieval, management, and browsing through the emotion plane," Taiwan and USA pending.
33. **Y.-H. Yang** and H.-H. Chen, "Digital data processing method for personalized information retrieval and computer readable storage medium and information retrieval system thereof," Taiwan and USA pending.

WORK AND TEACHING EXPERIENCES

1. **Guest Lecturer**

Music signal processing and recognition,
901E30700 Introduction to Multimedia Processing, NTU EE, 2009 fall.
922 U3570 Multimedia Analysis and Indexing, NTU CSIE, 2009 fall, 2008 fall.

2. **Research Assistant**

Development of music emotion classification system,
with Prof. Homer H. Chen, the Graduate Institute of Communication Engineering, 2005-now.
in the Program for Excellence Research Teams – Multi-modal Content Organization (2005-2008)
a research project collaborated with Chunghwa Telecom (2008-2009)
Development of facial expression detection and classification system,
with Prof. Tyng-Luh Liu, the **Institute of Information Science**, Academia Sinica, 2006 summer.

3. **Teaching Assistant**

System and Signals (2009s, 2008s, 2007s), Genetic algorithm (2007f),
Medical Imaging Systems (2008f), Neuro-Control Systems (2008f),
Video Signal Processing (2006f), Time Frequency Analysis and Wavelet Transform (2007f).
All in Electric Engineering Dept., National Taiwan University.

RESEARCH EXPERIENCES

1. **Music Emotion Recognition** (9/2005 -)

Music plays an important role in human's history, even more so in the digital age. As the music databases grow, more efficient organization and search methods are needed. Music classification by perceived emotion is a plausible approach, for it is content-centric and functionally powerful.

However, music emotion recognition is challenging because emotion is ambiguous and subjective. Typical music emotion classification approaches categorize emotions and apply pattern recognition methods to train a classifier. However, categorized emotions are too ambiguous for efficient music retrieval. We have modeled emotions as continuous variables composed of arousal and valence values (AV values), and formulated MEC as a regression problem. Promising results have been obtained.

Currently we are developing a multi-modal music emotion recognition system that utilizes features extracted from the musical signal and the lyrics.

2. **Online reranking for video/image search** (6/2007 -)

Image and video retrieval has been an active research area thanks to the continuing growth of videos, photo collections, media sharing in the social network, etc. The phenomenal success in WWW search has also helped attract increasing interest in investigating new solutions in video/image search.

To improve the text-based search, a novel reranking algorithm, ordinal reranking, is proposed to mine the co-occurrence patterns between the target semantics and extracted features. The adoption of ranking algorithms makes ordinal reranking more effective and efficient than classification-based reranking methods in mining ordinal information. Moreover, because ordinal ranking optimizes the ordering of an initial list directly, it is ease of the ad-hoc thresholding for noisy binary labels and requires no extra off-line learning processes or training data. Experimental results show that ordinal reranking is much more efficient and effective than existing reranking methods and improves 36% against the text-based initial search.

3. **Adaptive Media Playout** (3/2005 – 8/2005)

We propose a novel AMP control with a smooth frame-rate adjustment scheme that provides more robust and smoother playback than previous approaches. This AMP control detects the channel condition automatically and keeps the playout interval closed to the received interval, thus it is more adaptive than conventional buffer fullness based controls.

SKILLS

High-level languages: Java (J2SE, J2ME, JMF, JavaScript), C++, PHP.

Simulation software: Matlab.

REFERENCE

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