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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 Dec. 2009), Thesis Advisor: Homer. H. Chen, Ph.D.
The current research interests are multimedia information retrieval and indexing, music signal processing, human-centered computing, machine learning and affective computing.

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.

PUBLICATIONS

Journal Papers

1. **Y.-H. Yang**, Y.-C. Lin, Y.-F Su, and H.-H. Chen, "A regression approach to music emotion classification," *IEEE Transaction on Audio, Speech, and Language Processing*, vol. 16, no. 2, pp. 448-457, Feb. 2008.

Conference Papers

2. **Y.-H. Yang**, P.-T. Wu, C.-W. Lee, K.-H. Lin, and W.-H. Hsu, "ContextSeer: Context Search and Recommendation at Query Time for Shared Consumer Photos," *ACMMM* 2008, accepted (full paper).
3. P.-T. Wu, **Y.-H. Yang**, and W.-H. Hsu, " Keyword-based concept search on consumer photos by web-based kernel function," *ACMMM* 2008, accepted (short paper).
4. **Y.-H. Yang**, Y.-C. Lin, H.-T. Cheng, and H.-H. Chen, " Mr.Emo: Music retrieval in the emotion plane," *ACMMM* 2008, accepted (demo paper).
5. T.-L. Wu et al, " Interactive content presenter based on expressed emotion and physiological feedback," *ACMMM* 2008, accepted (demo paper).
6. **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," in *Proc. Pacific-Rim Conf. Multimedia 2008 (PCM'08)*, accepted.
7. H.-T. Cheng, **Y.-H. Yang**, Y.-C. Lin, I.-B. Liao, and H.-H. Chen, "Automatic chord recognition for music classification and retrieval," in *Proc. IEEE Int. Conf. Multimedia Expo 2008 (ICME'08)*, Hannover, German.
8. **Y.-H. Yang** and W.-H. Hsu, "Video search reranking via online ordinal reranking," in *Proc. IEEE Int. Conf. Multimedia Expo 2008 (ICME'08)*, Hannover, German.
9. 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," in *NIST TRECVID Workshop* 2007.
10. C.-C. Ma, **Y.-H. Yang**, and W. Hsu, "Image thumbnailing via multi-view face detection and saliency analysis," in *Proc. Conf. Visual Information Processing (VIP'07)*, 2007.
11. **Y.-H. Yang**, Y.-F. Su, Y.-C. Lin, and H.-H. Chen, "Music emotion recognition: The role of individuality," in *Proc. ACM SIGMM Int. Workshop on Human-centered Multimedia 2007, in conjunction with ACM Multimedia (ACM MM/HCM'07)*, Augsburg, Germany, pp. 13-21.
12. **Y.-H. Yang**, Y.-C. Lin, Y.-F Su, and H.-H. Chen, "Music emotion classification: A regression approach," in *Proc. IEEE Int. Conf. Multimedia Expo 2007 (ICME'07)*, Beijing, China, pp. 208-211.

13. **Y.-H. Yang**, C.-C Liu, and H.-H. Chen, "Music emotion classification: A fuzzy approach," in *Proc. ACM Multimedia 2006 (ACM MM'06)*, Santa Barbara, CA, USA, pp. 81-84.
14. C.-C Liu, **Y.-H. Yang**, P.-H. Wu, and H.-H. Chen, "Detecting and classifying emotion in popular music," in *Proc. 9th Joint Int. Conf. Information Sciences / 7th Int. Conf. Computer Vision, Pattern Recognition and Image Processing 2006 (JCIS/CVPRIP'06)*, Kaohsiung, Taiwan, pp. 996-999.
15. **Y.-H. Yang**, M.-T Lu, and H.-H. Chen, "Smooth playout control for video streaming over error-prone channels," in *Proc. IEEE Int. Symp. Multimedia 2006 (ISM'06)*, San Diego, CA, USA, pp. 415-418.

HONORS

1. 2008 **Third place in the paper contest of CML workshop,** Graduate Institute of Networking and Multimedia, NTU, paper title: "Reranking and recommendation for image search over large-scale consumer photos."
2. 2007 **Third place in the 3rd NISSAN Design Award** (http://www.nissan.com.tw/2007designaward/), project name: "Making your car knows you."
3. 2007, 2006 Class A Scholarship, Graduate Institute of Communication Engineering, National Taiwan University.
4. 2006 **First** student to enroll in the PhD program of Graduate Institute of Communication Engineering, National Taiwan University, **directly from undergrad**.
5. 2006 Travel grant to ACM International Conference on Multimedia (ACM MM'06).
6. 2006 **Third place in the 4th SOC**(system-on-chip) **innovation game**, SOC center of National Taiwan University, project title: "Music emotion recognition."
7. 2006 **First prize in the 15th Undergraduate Student Paper Contest**, EECS, Chinese Institute of Engineers, paper title: "Music emotion classification: A fuzzy approach."
8. 2005 **Undergraduate student special projection participation program** of National Science Council,
9. 2004 **Student exchange program** between Michigan State University (USA) and National Taiwan University.

WORK AND TEACHING EXPERIENCES

1. **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)
   Development of facial expression detection and classification system,
   with Prof. Tyng-Luh Liu, the **Institute of Information Science**, Academia Sinica, 2006 summer.
2. **Teaching Assistant**
   System and Signals (2008s, 2007s), Genetic algorithm (2007f),
   Time Frequency Analysis and Wavelet Transform (2007f), Video Signal Processing (2006f),
   All in Electric Engineering Dept., National Taiwan University.

RESEARCH EXPERIENCES

1. **<u>Online reranking for video/image search</u>** (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.
We are applying the reranking framework to the search of 0.5 million consumer photos collected from Flickr, with an aim to a submission to ACM MM 2008.

2. **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 (MEC) 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.

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, C++, .NET framework, openCV, openGL, PHP.
Simulation software: Matlab.
Graphics software: Photoshop, Corel.
Text editing software: latex

COURSE TAKEN

Advanced multimedia analysis and indexing, data mining, fuzzy algorithms and system, Multimedia analysis and indexing, digital communication, computer vision, computer graphics, digital signal processing, time-frequency analysis, information theory, computational linear algebra, algorithm, data structure, genetic algorithm, pattern recognition, computer network, wireless multimedia network, speech signal processing, etc.
(Courses taking this semester: multivariate statistical analysis, statistical artificial intelligence)

ACADEMIC SERVICES

Reviewer of
1. JISE (Journal of Information Science and Engineering) 2006
2. IWCMC 2006 Multimedia over Wireless
3. NSC proposals 2006, 2007, 2008.

REFERENCE

Homer H. Chen, Ph.D. 886-2-33663549
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