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RESEARCH INTERESTS

- Music information retrieval
- Multimedia signal processing
- Affective computing and human-centered multimedia
- Machine learning

EDUCATION

- Ph.D., Communication Engineering, National Taiwan University, Taiwan 2010
- B.S., Electrical Engineering, National Taiwan University, Taiwan 2006

AWARDS AND HONORS

- Best Conference Paper Award, IEEE Multimedia Communications Technical Committee (MMTC) 2015
- Best Paper Award, IEEE International Conference on Multimedia Expo. (ICME) 2015
- Young Scholars' Creativity Award, Foundations for the Advancement of Outstanding Scholarship 2015
- Ta-You Wu Memorial Research Award, Ministry of Science and Technology 2014
- Best Poster Award, IEEE/ACM Joint Conference on Digital Libraries 2014
- Project for Excellent Junior Research Investigators, National Science Council 2013–2016
- Career Development Award, Academia Sinica 2013–2017
- Pan Wen Yuan Research Exploration Award 2013
- First Prize, ACM Multimedia Grand Challenge 2012
- IEEE SPS Young Author Best Paper Award, IEEE Signal Processing Society 2011
- Best Ph.D. Dissertation Award, Graduate Institute of Communication Engineering, NTU 2010
- Best Ph.D. Dissertation Award, TAAI (Taiwanese Association for Artificial Intelligence) 2010
- MediaTek Fellowship 2009
- Microsoft Research Asia (MSRA) Fellowship 2008

WORK EXPERIENCES

- **Associate Research Fellow** in Research Center for IT Innovation, Academia Sinica since 2015/11

- **Joint-Appointment Associate Professor** in CSIE, National Cheng Kung University since 2017/01
- **Adjunct Associate Professor** in CSIE, National Tsing-Hua University 2016/02–07
- **Assistant Research Fellow** in Research Center for IT Innovation, Academia Sinica 2011/07–2015/11
- **Joint-appointment Assistant Research Fellow** in Institute of Information Science, Academia Sinica 2012/01–2015/11
- **Joint-Appointment Assistant Professor** in CSIE, National Cheng Kung University since 2013/09
- Visiting Scholar at Columbia University, USA 2013/06–08
- Visiting Scholar at Music Technology Group, Universitat Pompeu Fabra, Spain 2011/10–12
- Second Lieutenant in Communications, Electronics and Information, ROC Army 2010/8–2011/7

ACADEMIC SERVICES

- **Associate editor of**
 - IEEE Transactions on Affective Computing 2016/11–2018/11
 - IEEE Transactions on Multimedia 2016/9–2018/9
- **IEEE senior member** since 2017
- **Program chair of**
 - Int. Society for Music Information Retrieval Conference (ISMIR) 2014
- **Guest editor of**
 - ACM Transactions on Intelligent Systems and Technology 2015
 - IEEE Transactions on Affective Computing 2014
- **10K award committee member of**
 - IEEE International Conference on Multimedia and Expo. (ICME) 2016–2018
- **Unconference chair of**
 - Int. Society for Music Information Retrieval Conference (ISMIR) 2017
- **External PhD thesis committee member of**
 - Hong Kong University of Science and Technology 2015
- **Organizer of**
 - Int. Workshop on Affect and Sentiment in Multimedia, in conjunction with ACM MM 2015
 - MediaEval Affect Task: Music in Emotion 2013–2015
 - MIREX Singing Voice Separation Task 2014–2015
 - Int. Workshop on Affective Analysis in Multimedia, in conjunction with IEEE ICME 2013
 - Taiwanese Workshop on Music Information Retrieval 2012–2014
- **Member of**
 - Taiwan ACM SIGMM Chapter since 2014
- **Affiliated member of**
 - IEEE Multimedia Systems and Applications Technical Committee (MSA TC) of CAS since 2013
- **Invited voting member of**

- IEEE Comm. Society Multimedia Communications Technical Committee (MMTC) since 2010
- Technical program committee (TPC) member of
 - Intl. Society for Music Information Retrieval Conference (ISMIR) 2015
- Reviewer of
 - Transactions such as TASLP, TMM, TKDE, TSP, TIP, TOMM, TAC NC, MultiMedia, JNMR, JMM, JIIS, PRL, JASA, FnTIR, ASP, etc.
 - Conferences such as ISMIR, ACM MM, ICME, ICASSP, WASPAA, etc.

TUTORIAL

- X. Hu and **Y.-H. Yang**, “Music Affect Recognition: The State-of-the-art and Lessons Learned,” *Int. Society of Music Information Retrieval Conference (ISMIR)*, 2012.

COMPETITION

- 9th Prize, KDD Cup (among 821 participants) 2015
- 2nd Prize, ISMIR Grand Challenge on User eXperience (among 3 finalists) 2014
- 1st Prize, ACM Multimedia Grand Challenge (among 17 finalist teams) 2012

PUBLICATIONS (including number of citations indicated in Google Scholar [link](#))

Total citations: 2549; citations of most-cited paper: 354; h-index: 25; i10-index: 53

- **Book**

- [1] **Y.-H. Yang** and H.-H. Chen, *Music Emotion Recognition*, CRC Taylor & Francis Books, Feb. 2011.

- **Book Chapters**

- [2] J.-C. Wang, **Y.-H. Yang** and H.-M. Wang, “Affective music information retrieval,” In *Emotions and Personality in Personalized Services*, M. Tkalčič *et al.* Eds., Springer, 2016.
- [3] **Y.-H. Yang**, J.-C. Wang, Y.-A. Chen, and H. H. Chen, “Model Adaptation for Personalized Music Emotion Recognition,” In *Handbook of Pattern Recognition and Computer Vision*, C.-H. Chen Eds., World Scientific Publishing, Feb. 2016.

- **Journal Papers**

- [4] Y.-P. Lin, P.-K. Jao, and **Y.-H. Yang**, “Improving cross-day EEG-based emotion classification using robust principal component analysis,” *Frontiers in Computational Neuroscience*, 2017.
- [5] A. Aljanaki, **Y.-H. Yang**, and M. Soleymani, “Developing a benchmark for emotional analysis of music,” *PLOS ONE*, vol, 12, no. 3, e0173392.doi:10.1371/journal.pone.0173392, 2017.
- [6] Y.-H. Chin, J.-C. Wang, J.-C. Wang and **Y.-H. Yang**, “Predicting the probability density function of music emotion using emotion space mapping,” *IEEE Transactions on Affective Computing (TAC)*, accepted for publication.
- [7] X. Hu and **Y.-H. Yang**, “The mood of Chinese pop music: Representation and recognition,” *Journal of*

the Association for Information Science and Technology (JAIST), accepted for publication.

- [8] Y.-A. Chen, J.-C. Wang, **Y.-H. Yang**, H.-H. Chen, "Component tying for mixture model adaptation in personalization of music emotion recognition," *IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 25, no. 7, pp. 1409-1420, Jul. 2017. [cover page of the issue]
- [9] X. Hu and **Y.-H. Yang**, "Cross-dataset and cross-cultural music mood prediction: A case on Western and Chinese pop songs," *IEEE Transactions on Affective Computing (TAC)*, vol. 8, no. 2, pp. 228-240, Apr. 2017.
- [10] T.-S. Chan and **Y.-H. Yang**, "Informed group-sparse representation for singing voice separation," *IEEE Signal Processing Letters (SPL)*, vol. 24, no. 2, pp. 156-160, Feb. 2017.
- [11] T.-S. Chan and **Y.-H. Yang**, "Polar n -complex and n -bicomplex singular value decomposition and principal component pursuit," *IEEE Transactions on Signal Processing (TSP)*, vol. 64, no. 24, pp. 6533-6544, Dec. 2016.
- [12] M. Schedl, **Y.-H. Yang**, and P. Herrera, "Introduction to intelligent music systems and applications," *ACM Transactions on Intelligent Systems and Technology (TIST)*, vol. 8, no. 2, article 17, Oct. 2016.
- [13] P.-K. Jao, L. Su, **Y.-H. Yang** and B. Wohlberg, "Monaural music source separation using convolutional sparse coding," *IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 24, no. 11, pp. 2158-2170, Nov. 2016.
- [14] T.-S. Chan and **Y.-H. Yang**, "Complex and quaternionic principal component pursuit and its application to audio separation," *IEEE Signal Processing Letters (SPL)*, vol. 23, no. 2, pp. 287-291, Feb. 2016.
- [15] C.-Y. Liang, L. Su and **Y.-H. Yang**, "Musical onset detection using constrained linear reconstruction," *IEEE Signal Processing Letters (SPL)*, vol. 22, no. 11, pp. 2142-2146, Nov. 2015.
- [16] L. Su and **Y.-H. Yang**, "Combining spectral and temporal representations for multipitch estimation of polyphonic music," *IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 23, no. 10, pp. 1600-1612, Oct. 2015.
- [17] P.-K. Jao and **Y.-H. Yang**, "Music annotation and retrieval using unlabeled exemplars: correlation and sparse codes," *IEEE Signal Processing Letters (SPL)*, vol. 22, no. 10, pp. 1771-1775, Oct. 2015.
- [18] **Y.-H. Yang** and Y.-C. Teng, "Quantitative study of music listening behavior in a smartphone context," *ACM Transactions on Interactive Intelligent Systems (TiiS)*, vol. 5, no. 3, article 14, Aug. 2015.
- [19] M. Soleymani, **Y.-H. Yang**, G. Irie, and A. Hanjalic, "Challenges and perspectives for affective analysis in multimedia," *IEEE Transactions on Affective Computing (TAC)*, vol. 6, no. 3, pp. 206-208, 2015.
- [20] J.-C. Wang, **Y.-H. Yang**, H.-M. Wang, and S.-K. Jeng, "Modeling the affective content of music with a Gaussian mixture model," *IEEE Transactions on Affective Computing (TAC)*, vol. 6, no. 1, pp. 56-68, Feb. 2015.
- [21] L. Su, H.-M. Lin, and **Y.-H. Yang**, "Sparse modeling of magnitude and phase-derived spectra for playing technique classification," *IEEE Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 22, no. 12, pp. 2122-2132, Dec. 2014.
- [22] L. Su, C.-C. Yeh, J.-Y. Liu, J.-C. Wang, and **Y.-H. Yang**, "A systematic evaluation of the bag-of-frames representation for music information retrieval," *IEEE Transactions on Multimedia (TMM)*, vol. 16, no. 5, pp. 1188-1200, Aug. 2014.
- [23] Y.-P. Lin, **Y.-H. Yang**, and T.-P. Jung, "Fusion of Electroencephalogram dynamics and musical contents for estimating emotional responses in music listening," *Frontiers in Neuroscience*, vol. 8, no. 94, pp.

1-14, May 2014.

- [24] **Y.-H. Yang** and J.-Y. Liu, "Quantitative study of music listening behavior in a social and affective context," *IEEE Transactions on Multimedia (TMM)*, vol. 15, no. 6, pp. 1304-1315, Oct. 2013.
- [25] K.-S. Lin, A. Lee, **Y.-H. Yang**, C.-T. Lee, and H.-H. Chen, "Automatic highlights extraction for drama video using music emotion and human face features," *Neurocomputing*, vol. 119, pp. 111-117, Nov. 2013.
- [26] C.-T. Lee, **Y.-H. Yang** and H.-H. Chen, "Multipitch estimation of piano music by exemplar-based sparse representation," *IEEE Transactions on Multimedia (TMM)*, vol. 14, no. 3, pp. 608-618, Jun. 2012.
- [27] **Y.-H. Yang** and H.-H. Chen, "Machine recognition of music emotion: a review," *ACM Transactions on Intelligent Systems and Technology (TIST)*, vol. 3, no. 3, article 40, May 2012.
- [28] Y.-C. Lin, **Y.-H. Yang**, and H.-H. Chen, "Exploiting online tags for music emotion classification," *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMCCAP)*, vol. 7s, no. 1, article 26, Oct. 2011.
- [29] **Y.-H. Yang** and H.-H. Chen, "Prediction of the distribution of perceived music emotions using discrete samples," *IEEE Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 19, no. 7, pp. 2184-2196, Sep. 2011.
- [30] **Y.-H. Yang** and H.-H. Chen, "Ranking-based emotion recognition for music organization and retrieval," *IEEE Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 19, no. 4, pp. 762-774, May 2011.
- [31] 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 (TMM)*, vol. 11, no. 7, pp. 1331-1339, Nov. 2009.
- [32] **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 (TCSVT)*, vol. 19, no. 12, pp. 1880-1890, Dec. 2009.
- [33] **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 (TASLP)*, vol. 16, no. 2, pp. 448-457, Feb. 2008.

• Conference Papers

- [34] H.-W. Dong, W.-Y. Hsiao, L.-C. Yang and **Y.-H. Yang**, "MuseGAN: Symbolic-domain music generation and accompaniment with multi-track sequential generative adversarial networks," in *Proc. AAAI Conf. Artificial Intelligence (AAAI)*, 2018.
- [35] Y.-S. Huang, S.-Y. Chou and **Y.-H. Yang**, "Generating music medleys via playing music puzzle games," in *Proc. AAAI Conf. Artificial Intelligence (AAAI)*, 2018.
- [36] Y.-S. Huang, S.-Y. Chou and **Y.-H. Yang**, "Music thumbnailing via neural attention modeling of music emotion," in *Proc. Asia Pacific Signal and Information Processing Association Annual Summit and Conf. (APSIPA ASC)*, 2017.
- [37] C.-A. Yu, T.-S. Chan and **Y.-H. Yang**, "Low-rank matrix completion over finite Abelian group algebras for context-aware recommendation," in *Proc. ACM Int. Conf. Information and Knowledge Management (CIKM)*, 2017.
- [38] L.-C. Yang, S.-Y. Chou, **Y.-H. Yang**, "MidiNet: A convolutional generative adversarial network for symbolic-domain music generation," in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*,

2017.

- [39] C.-C. Shih, P.-C. Li, Y.-J. Lin, A. W. Y. Su, L. Su and **Y.-H. Yang**, "Analysis and synthesis of the violin playing styles of Heifetz and Oistrakh," in *Proc. Int. Conf. Digital Audio Effects (DAFx)*, 2017.
- [40] S.-Y. Chou, L.-C. Yang, **Y.-H. Yang**, and J.-S. Jang, "Conditional preference nets for user and item cold start problems in music recommendation," *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, 2017, accepted.
- [41] Z.-C. Fan, T.-S. T. Chan, **Y.-H. Yang**, and J.-S. R. Jang, "Music signal processing using vector product neural networks," *Proc. International Workshop on Deep Learning for Music (DLM)*, 2017.
- [42] L.-C. Yang, S.-Y. Chou, J.-Y. Liu, **Y.-H. Yang**, and Yi-An Chen, "Revisiting the problem of audio-based hit song prediction using convolutional neural networks," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, pp. 621-625, 2017.
- [43] T.-W. Su, J.-Y. Liu, and **Y.-H. Yang**, "Weakly-supervised audio event detection using event-specific Gaussian filters and fully convolutional networks," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, pp. 791-795, 2017.
- [44] S.-Y. Su, C.-K. Chiu, L. Su, and **Y.-H. Yang**, "Automatic conversion of pop music into chiptunes for 8-bit pixel art," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, pp. 411-415, 2017.
- [45] L. Gao, L. Su, **Y.-H. Yang**, and T. Lee, "Polyphonic piano note transcription with non-negative matrix factorization of differential spectrogram," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, pp. 291-295, 2017.
- [46] W.-L. Wei, J.-C. Lin, T.-L. Liu, **Y.-H. Yang**, H.-M. Wang, H.-R. Tyan, H.-Y. M. Liao, "Deep-net fusion to classify shots in concert videos," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, pp. 1383-1387, 2017.
- [47] M.-H. Yang, L. Su and **Y.-H. Yang**, "Highlighting root notes in chord recognition using cepstral features and multi-task learning," in *Proc. Asia Pacific Signal and Information Processing Association Annual Summit and Conf. (APSIPA ASC)*, 2016.
- [48] J.-Y. Liu and **Y.-H. Yang**, "Event localization in music auto-tagging," in *Proc. ACM Multimedia (MM)*, full paper (acceptance rate 20%), pp. 1048-1057, 2016.
- [49] S.-Y. Chou, **Y.-H. Yang**, J.-S. Jang and Y.-C. Lin, "Addressing cold start for next-song recommendation," in *Proc. ACM Recommender Systems (RecSys)*, short paper, pp. 115-118, 2016.
- [50] C.-M. Chen, M.-F. Tsai, Y.-C. Lin and **Y.-H. Yang**, "Query-based music recommendations via preference embedding," in *Proc. ACM Recommender Systems (RecSys)*, short paper, pp. 79-82, 2016.
- [51] C.-H. Yang, P.-C. Li, A. W. Y. Su, L. Su, and **Y.-H. Yang**, "Automatic violin synthesis using expressive musical term features," in *Proc. Int. Conf. Digital Audio Effects (DAFx)*, 2016.
- [52] L. Su, T.-Y. Chuang and **Y.-H. Yang**, "Exploiting frequency, periodicity and harmonicity using advanced time-frequency concentration techniques for multipitch estimation of choir and symphony," in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 393-399, 2016.
- [53] Y.-P. Chen, L. Su and **Y.-H. Yang**, "Electric guitar playing technique detection in real-world recording based on F0 sequence pattern recognition," in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 708-714, 2015.

- [54] C.-Y. Liang, L. Su, H.-M. Lin and **Y.-H. Yang**, "Musical offset detection of pitched instruments: the case of violin," in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 281-287, 2015.
- [55] P.-C. Li, L. Su, **Y.-H. Yang** and A. W. Y. Su, "Analysis of expressive musical terms in violin using score-informed and expression-based audio features," in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 809-815, 2015.
- [56] Y.-J. Luo, L. Su, **Y.-H. Yang** and T.-S. Chi, "Detection of common mistakes in novice violin playing," in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 316-322, 2015.
- [57] J.-W. Peng, S.-W. Sun, W.-H. Cheng, and **Y.-H. Yang**, "eMosaic: Mobile media pushing through social emotion sensing," in *Proc. ACM Multimedia (MM)*, demo paper, 2015.
- [58] A. Aljanaki, **Y.-H. Yang**, and M. Soleymani, "Emotion in Music Task at MediaEval 2015," in *Proc. MediaEval Workshop*, extended abstract, 2015.
- [59] P.-K. Jao, Y.-P. Lin, **Y.-H. Yang**, and T.-P. Jung, "Using robust principal component analysis to alleviate day-to-day variability in EEG based emotion classification," in *Proc. Annual Int. Conf. IEEE Engineering in Medicine and Biology Society (EMBC)*, pp. 570-573, 2015.
- [60] C.-M. Chen, P.-C. Chien, M.-F. Tsai, **Y.-H. Yang** and Y.-C. Lin, "Exploiting latent social listening representations for music recommendations," in *Proc. ACM Recommender Systems (RecSys)*, poster paper, 2-page poster paper, 2015.
- [61] P.-K. Jao, P.-I. Chen, and **Y.-H. Yang**, "Disk Jockey in Brain - A prototype for volume control of tracked instrument during playback," in *Proc. Int. Works. Brain-Computer Music Interfacing (BCMI)*, 2015.
- [62] L. Su and **Y.-H. Yang**, "Escaping from the abyss of manual annotation: New methodology of building polyphonic datasets for automatic music transcription," in *Proc. Int. Symp. Computer Music Multidisciplinary Research (CMMR)*, 2015.
- [63] P.-I. Chen, J.-Y. Liu, and **Y.-H. Yang**, "Personal factors in music preference and similarity: User study on the role of personality traits," in *Proc. Int. Symp. Computer Music Multidisciplinary Research (CMMR)*, 2015.
- [64] S.-Y. Chou, **Y.-H. Yang**, and Y.-C. Lin, "Evaluating music recommendation in a real-world setting: On data splitting and evaluation metrics," in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, 2015.
- [65] P.-K. Jao, **Y.-H. Yang**, and B. Wohlberg, "Informed monaural source separation of music based on convolutional sparse coding," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2015.
- [66] T.-S. Chan, T.-C. Yeh, Z.-C. Fan, H.-W. Chen, L. Su, **Y.-H. Yang**, and J.-S. Jang, "Vocal activity informed singing voice separation with the IKALA dataset," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2015.
- [67] Y.-A. Chen, **Y.-H. Yang**, J.-C. Wang, H. H. Chen, "The AMG1608 dataset for music emotion recognition," in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2015.
- [68] C.-H. Yeh, **Y.-H. Yang**, M.-H. Chang, and H.-Y. M. Liao, "Music driven human motion manipulation for characters in a video," in *Proc. IEEE Int. Symp. Multimedia (ISM)*, 2014.
- [69] C.-M. Chen, H.-P. Chen, M.-F. Tsai, and **Y.-H. Yang**, "Leverage item popularity and recommendation quality via cost-sensitive factorization machines," in *Proc. IEEE Int. Conf. Data Mining (ICDM)*, Ph.D. forum paper, 2014.
- [70] C.-C. M. Yeh, P.-K. Jao, and **Y.-H. Yang**, "AWtoolbox: Characterizing audio information using audio

words,” in *Proc. ACM Multimedia (MM)*, short paper, 2014.

- [71] M. Soleymani, A. Aljanaki, **Y.-H. Yang**, M. N. Caro, F. Eyben, K. Markov, B. Schuller, R. Veltkamp, F. Wening, and F. Wiering, “Emotional analysis of music: A comparison of methods,” in *Proc. ACM Multimedia (MM)*, short paper, 2014.
- [72] A. Aljanaki, **Y.-H. Yang**, and M. Soleymani, “Emotion in Music Task at MediaEval 2014,” in *Proc. MediaEval Workshop*, extended abstract, 2014.
- [73] L. Su, L.-F. Yu, and **Y.-H. Yang**, “Sparse cepstral and phase codes for guitar playing technique classification,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, 2014.
- [74] J.-C. Wang, M.-C. Yan, **Y.-H. Yang** and H.-M. Wang, “Automatic set list identification and song segmentation of full-length concert videos,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, 2014.
- [75] L. Su and **Y.-H. Yang**, “Power-scaled spectral flux and peak-valley group-delay methods for robust musical onset detection,” in *Proc. Sound and Music Computing Conference (SMC)*, 2014.
- [76] L. Su, L.-F. Yu, **Y.-H. Yang**, and Hsin-Yu Lai, “Resolving octave ambiguities: A cross-dataset Investigation,” in *Proc. Sound and Music Computing Conference (SMC)*, 2014.
- [77] X. Hu and **Y.-H. Yang**, “A study on cross-cultural and cross-dataset generalizability of music mood regression models,” in *Proc. Sound and Music Computing Conference (SMC)*, pp. 1149–1155, 2014.
- [78] X. Hu and **Y.-H. Yang**, “Cross-cultural mood regression for music digital libraries,” in *Proc. IEEE/ACM Joint Conf. Digital Libraries (DL)*, 2014. **[Best Poster Award]**
- [79] J.-Y. Liu, S.-Y. Liu and **Y.-H. Yang**, “LJ2M Dataset: Toward better understanding of music listening behavior and user mood,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, 2014.
- [80] S.-Y. Wang, J.-C. Wang, **Y.-H. Yang** and H.-M. Wang, “Towards time-varying music auto-tagging based on CAL500 Expansion,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, 2014.
- [81] W.-C. Lin, S.-W. Sun, W.-. Cheng, **Y.-H. Yang**, K.-L. Hua, F.-J. Wang, and J.-J. Wang, “Attaching-Music: an interactive music delivery system for private listening as wherever you go,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, demo paper, 2014.
- [82] P.-K. Jao, C.-C. M. Yeh and **Y.-H. Yang**, “Modified LASSO screening for audio word-based music classification using large-scale dictionary,” in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2014.
- [83] L.-F. Yu, L. Su and **Y.-H. Yang**, “Sparse cepstral codes and power scale for instrument identification,” in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2014.
- [84] C.-C. M. Yeh, J.-C. Wang, **Y.-H. Yang** and H.-M. Wang, “Improving music auto-tagging by intra-song instance bagging,” in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2014.
- [85] Y.-A. Chen, J.-C. Wang, **Y.-H. Yang** and H.-H. Chen, “Linear regression-based adaptation of music emotion recognition models for personalization,” in *Proc. IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2014.
- [86] L. Su and **Y.-H. Yang**, “Sparse modeling for artist identification: Exploiting phase information and vocal separation,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 349–354, 2013.
- [87] **Y.-H. Yang**, “Low-rank representation of both singing voice and music accompaniment via learned dictionaries,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 427–432, 2013.

- [88] M. Soleymani, M. N. Caro, E. Schmidt, C.-Y. Sha, and **Y.-H. Yang**, “1000 songs for emotional analysis of music,” in *Proc. Int. Workshop on Crowdsourcing for Multimedia (CrowdMM)*, pp. 1–6, 2013.
- [89] M. Soleymani, M. N. Caro, E. Schmidt, C.-Y. Sha, and **Y.-H. Yang**, “The MediaEval 2013 brave new task: Emotion in Music,” in *Proc. MediaEval Workshop*, in conjunction with ACM Multimedia, extended abstract, 2013.
- [90] C.-M. Chen, M.-F. Tsai, J.-Y. Liu, and **Y.-H. Yang**, “Using Emotional Context from Article for Contextual Music Recommendation,” in *Proc. ACM Multimedia (MM)*, short paper, 2013.
- [91] C.-M. Chen, M.-F. Tsai, J.-Y. Liu, and **Y.-H. Yang**, “Music recommendation based on multiple contextual similarity information,” in *Proc. IEEE/WIC/ACM Int. Conf. Web Intelligence (WI)*, 2013.
- [92] P.-K. Jao, L. Su, and **Y.-H. Yang**, “Analyzing the dictionary properties and sparsity constraints for a dictionary-based music genre classification system,” in *Proc. Asia Pacific Signal and Information Processing Association Annual Summit and Conf. (APSIPA ASC)*, 2013.
- [93] C.-C. Yeh and **Y.-H. Yang**, “Towards a more efficient sparse coding based audio-word feature extraction system,” in *Proc. Asia Pacific Signal and Information Processing Association Annual Summit and Conf. (APSIPA ASC)*, 2013.
- [94] **Y.-H. Yang**, “Towards real-time music auto-tagging using sparse features,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, oral paper (best paper finalist), 2013.
- [95] Y.-C. Teng, Y.-S. Kuo, and **Y.-H. Yang**, “A large in-situ data set for context-aware music recommendation on smartphones,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, short paper, 2013.
- [96] C.-C. Yeh, L. Su, and **Y.-H. Yang**, “Dual-layer bag-of-frames model for music genre classification,” in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 246–250, 2013.
- [97] C.-Y. Sha, Y.-H. Yang, and H. H. Chen, “Singing voice timbre classification of Chinese popular music,” in *Proc. IEEE Int. Conf. Acoustics, Speech, and Signal Processing (ICASSP)*, pp. 734–738, 2013.
- [98] J.-C. Wang, **Y.-H. Yang**, H.-M. Wang, and S.-K. Jeng, “Personalized music emotion recognition via model adaptation,” in *Proc. Asia Pacific Signal and Information Processing Association Annual Summit and Conf. (APSIPA ASC)*, 2012.
- [99] J.-C. Wang, **Y.-H. Yang**, H.-M. Wang, and S.-K. Jeng, “The Acoustic Emotion Gaussians model for emotion-based music annotation and retrieval,” in *Proc. ACM Multimedia (MM)*, full paper (accept rate=20%), pp. 89–98, 2012.
- [100] J.-Y. Liu, C.-C. Yeh, Y.-C. Teng, and **Y.-H. Yang**, “Bilingual analysis of song lyrics and audio words,” in *Proc. ACM Multimedia (MM)*, short paper, pp. 829–832, 2012.
- [101] **Y.-H. Yang**, “On sparse and low-rank matrix decomposition for singing voice separation,” *Proc. ACM Multimedia (MM)*, short paper, pp. 757–760, 2012.
- [102] J.-Y. Liu and **Y.-H. Yang**, “Inferring personal traits from music listening history,” in *Proc. Int. Workshop on Music Information Retrieval with User-Centered and Multimodal Strategies (MIRUM)*, pp. 31–36, 2012.
- [103] J.-C. Wang, **Y.-H. Yang**, K.-C. Chang, H.-M. Wang, and S.-K. Jeng, “Exploring the relationship between categorical and dimensional emotion semantics of music,” in *Proc. Int. Workshop on Music Information Retrieval with User-Centered and Multimodal Strategies (MIRUM)*, pp. 63–68, 2012.
- [104] **Y.-H. Yang** and X. Hu, “Cross-cultural music mood classification: A comparison of English and Chinese

- songs,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 19–24, 2012.
- [105] C.-C. Yeh and **Y.-H. Yang**, “Supervised dictionary learning for music genre classification,” in *Proc. ACM Int. Conf. Multimedia Retrieval (ICMR)*, 2012.
- [106] **Y.-H. Yang**, D. Bogdanov, P. Herrera, and M. Sordo, “Music retagging using label propagation and robust principal component analysis,” in *Proc. Int. Workshop on Advances in Music Information Research (AdMIRe)*, pp. 869–876, 2012.
- [107] C.-D. Lee, **Y.-H. Yang**, and H.-H. Chen, “Automatic transcription of piano music by sparse representation of magnitude spectra,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, oral paper, 2011.
- [108] Y.-H. Kuo, H.-T. Lin, W.-H. Cheng, **Y.-H. Yang**, and W.-H. Hsu, “Unsupervised auxiliary visual words discovery for large-scale image object retrieval,” in *Proc. IEEE Int. Conf. Computer Vision and Pattern Recognition (CVPR)*, 2011.
- [109] K.-S. Lin, A. Lee, **Y.-H. Yang**, C.-T. Lee and H.-H. Chen, “Automatic highlights extraction for drama video using music emotion and human face features,” in *Proc. IEEE Int. Workshop on Multimedia Signal Processing (MMSP)*, 2011.
- [110] Y.-H. Kuo, Y.-L. Wu, K.-T. Chen, **Y.-H. Yang**, T.-H. Chiu, and W.-H. Hsu, “A technical demonstration of large-scale image object retrieval by efficient query evaluation and effective auxiliary visual feature discovery,” in *Proc. ACM Multimedia (MM)*, technical demo, 2010.
- [111] **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, “Personalized music emotion recognition,” in *Proc. ACM Int. Conf. Information Retrieval (SIGIR)*, pp. 748–749, 2009.
- [112] **Y.-H. Yang**, Y.-C. Lin, A. Lee, and H.-H. Chen, “Improving musical concept detection by ordinal regression and context fusion,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 147–152, 2009.
- [113] M.-Y. Su, **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, “An integrated approach to music boundary detection,” in *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, pp. 705–710, 2009.
- [114] **Y.-H. Yang** and H.-H. Chen, “Music emotion ranking,” in *Proc. IEEE Int. Conf. Acoustic, Speech, and Signal Processing (ICASSP)*, pp. 1657–1660, 2009.
- [115] **Y.-H. Yang**, Y.-C. Lin, and H.-H. Chen, “Clustering for music search results,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, pp. 874–877, 2009.
- [116] Y.-C. Lin, **Y.-H. Yang**, and H.-H. Chen, “Exploiting genre for music emotion classification,” in *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, pp. 618–621, 2009.
- [117] 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,” in *Proc. IEEE Int. Symp. Circuits and Systems (ISCAS)*, pp. 1677–1680, 2009.
- [118] L.-C. Hsieh, K.-T. Chen, C.-H. Chiang, **Y.-H. Yang**, G.-L. Wu, C.-S. Ferng, H.-W. Hsueh, C.-R. Tsia, and W.-H. Hsu, “Canonical image selection and efficient image graph construction for large-scale Flickr photos,” *Grand Challenge for ACM Multimedia (MM)*, pp. 1121–1122, 2009.
- [119] **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 Multimedia (MM)*, full paper (accept rate=20%), pp. 199–208, 2008.
- [120] P.-T. Wu, **Y.-H. Yang**, and W.-H. Hsu, “Keyword-based concept search on consumer photos by web-based kernel function,” in *Proc. ACM Multimedia (MM)*, short paper, pp. 651–654, 2008.

- [121] 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 presentation based on expressed emotion and physiological feedback," in *Proc. ACM Multimedia (MM)*, technical demonstration, pp. 1009–1010, 2008.
- [122] **Y.-H. Yang** and W.-H. Hsu, "Video search reranking via online ordinal reranking," *Proc. IEEE Int. Conf. Multimedia and Expo. (ICME)*, 2008.
- [123] **Y.-H. Yang**, Y.-C. Lin, H.-T. Cheng, and H.-H. Chen, "Mr. Emo: Music retrieval in the emotion plane," in *Proc. ACM Multimedia (MM)*, technical demo, pp. 1003–1004, 2008.
- [124] **Y.-H. Yang**, Y.-C. Lin, H.-T. Cheng, I.-B. Liao, Y.-C. Ho, and H.-H. Chen, "Toward multi-modal music emotion classification," in *Proc. Pacific-Rim Conf. Multimedia (PCM)*, pp. 70–79, 2008.
- [125] 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 and Expo. (ICME)*, pp. 1505–1508, 2008.
- [126] **Y.-H. Yang**, Y.-F. Su, Y.-C. Lin, and H.-H. Chen, "Music emotion recognition: The role of individuality," in *Proc. Int. Workshop on Human-centered Multimedia (HCM)*, pp. 13–21, 2007.
- [127] **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 and Expo. (ICME)*, pp. 208–211, 2007.
- [128] 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*.
- [129] 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)*, 2007.
- [130] **Y.-H. Yang**, C.-C. Liu, and H.-H. Chen, "Music emotion classification: A fuzzy approach," in *Proc. ACM Multimedia (MM)*, short paper, pp. 81–84, 2006.
- [131] C.-C. Liu, **Y.-H. Yang**, P.-H. Wu, and H.-H. Chen, "Detecting and classifying emotion in popular music," in *Proc. Joint Int. Conf. Information Sciences & Int. Conf. Computer Vision, Pattern Recognition and Image Processing 2006 (JCIS/CVPRIP)*, pp. 996–999, 2006.
- [132] **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 (ISM)*, pp. 415–418, 2006.

• Technical Report

- [133] C.-M. Chen, **Y.-H. Yang**, Y.-A. Chen, M.-F. Tsai, "Vertex-context sampling for weighted network embedding," in: ArXiv e-prints, abs/1711.00227, submitted November 2017.
- [134] L.-C. Yu, **Y.-H. Yang**, Y.-N. Hung, Y.-A. Chen, "Hit song prediction for pop music by Siamese CNN with ranking loss," in: ArXiv e-prints, abs/1710.10814, submitted October 2017.
- [135] J.-Y. Liu, S.-K. Jeng and **Y.-H. Yang**, "Applying topological persistence in convolutional neural network for music audio signals," in: ArXiv e-prints, abs/1608.07373, submitted August 2016.
- [136] C.-C. M. Yeh, P.-K. Jao, and **Y.-H. Yang**, "The AWtoolbox for Characterizing Audio Information," Technical report, TR-CITI-15-001, Academia Sinica, March 2015.

• Extended abstracts

- [137] S.-Y. Chou, J.-S. R. Jang, and **Y.-H. Yang**, "FrameCNN: A weakly-supervised learning framework for frame-wise acoustic event detection and classification," *Proc. Detection and Classification of Acoustic Scenes and Events Workshop (DCASE)*, extended abstract, 2017.
- [138] H.-W. Dong, W.-Y. Hsiao, L.-C. Yang, and **Y.-H. Yang**, "MuseGAN: Demonstration of a convolutional GAN based model for generating multi-track piano-rolls," *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, demo paper, 2017.
- [139] Y.-S. Huang, S.-Y. Chou, and **Y.-H. Yang**, "DJnet: A Dream for Making An Automatic DJ," *Proc. Int. Society of Music Information Retrieval Conf. (ISMIR)*, demo paper, 2017.
- [140] A. Aljanaki, **Y.-H. Yang**, and M. Soleymani "Musical emotion variation detection from acoustic content - lessons learned from developing MediaEval "Emotion in Music" benchmark," in *Proc. Int. Conf. Music and Emotion (ICME4)*, 2015.
- [141] J.-C. Wang, **Y.-H. Yang**, H.-M. Wang, "The acousticvisual emotion Gaussians model for automatic generation of music video," in *Proc. ACM Multimedia (MM)*, grand challenge solution paper (**First Prize**), pp. 1379–1380, 2012.

- **Newsletters**

- [142] J.-C. Wang, **Y.-H. Yang** and H.-M. Wang, "Affective analysis of music signals using Acoustic Emotion Gaussians: A brief overview," *APSIPA Newsletters*, 2015 (invited paper).
- [143] Y.-H. Yang and H.-H. Chen, "Searching music in the emotion plane," *IEEE MMTC E-Letter*, November issue, 2009 (invited position paper).

- **Domestic**

- [144] L. Su, H.-M. Lin and Y.-H. Yang, "Sparse modeling of subtle timbre: a case study on violin playing technique," *Proc. Workshop on Computer Music and Audio Technology (WOCMAT)*, 2013.
- [145] **Y.-H. Yang** and H.-H. Chen, "iMR: Interactive music recommendation via active interactive genetic algorithm," *Proc. Workshop on Computer Music and Audio Technology (WOCMAT)*, 2009.

- **Dissertation**

- [146] **Y.-H. Yang**, *Dimensional Music Emotion Recognition for Content Retrieval*, defended at Jan. 21, 2010.

PATENTS

- H.-H. Chen and **Y.-H. Yang**, "Search device and associated methods," USA patent, US 8,666,910 B2, Mar. 4, 2014.
- **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," USA patent, US 8,321,412 B2, Nov. 27, 2012.
- **Y.-H. Yang** and H. H. Chen, "用於模擬個體差異之個人化資訊檢索之數位資料處理方法及其電腦裝置可讀式資訊儲存媒體與資訊檢索系統 (Digital data processing method for personalized information retrieval and computer readable storage medium and information retrieval system thereof)," Taiwan patent, TW I396105, May 2013.
- W.-L. Chang, I.-B. Liao, Y.-C. Lin, **Y.-H. Yang**, and H.-H. Chen, "基於曲風之音樂情緒二層式分類法 (A

genre-based two-layer structure for music emotion classification),” Taiwan patent, TW I380285, Dec. 21, 2012.

- **Y.-H. Yang** and H. H. Chen, “多媒體檢索系統、建立該系統的方法及其應用方法 (A Multimedia Searching System, a Method of Building the System and Associate Searching Method Thereof),” Taiwan patent, TW 201022968 Jun. 2010.

TECHNOLOGY TRANSFERS

- Automatic Fine-Granularity Music Genre Classification KKBOX Inc., 2013
- Automatic Music Usage Classification HTC Inc., 2012

PROJECTS (that serve as the PI, not co-PI)

- User-centered Intelligent Music Streaming and Recommendation Platform (II) KKBOX Inc., 2015-2017
- User-centered Intelligent Music Streaming and Recommendation Platform KKBOX Inc., 2013-2015
- User Preference Modeling from Listening History & Artist Similarity KKBOX Inc., 2012-2013
- Music Recommendation based on Listening Context HTC Inc., 2012
- Dictionary-based Music Signal Analysis, Understanding, and Retrieval Academia Sinica, 2013-2017
- Mobile Music Recommendation using Brain-Computer Interfaces MOST 2015-2018
- Automatic Music Recommendation and Retrieval MOST 2013-2016
- Dictionary-based Multipitch Estimation of Polyphonic Music NSC 2012-2013
- Large-scale Music Emotion Recognition System using Social Media NSC 2011-2012

PRESS RELEASES

- 科學人雜誌「中研院挑戰卓越專輯系列」 (on emotion-based music video composition) 2014
- National Taiwan University GICE Newsletter (on emotion-based music video composition) 2013
- Selected project for Academia Sinica (on emotion-based music video composition) 2012
- Selected project for National Science Council (on music emotion recognition on smartphones) 2011

REFERENCES

Available upon request