

Winston Hsu

Visiting Scientist—Cognitive Computing, IBM TJ Watson Research Center, Yorktown Heights, New York
Professor, Dept. of Computer Science and Information Eng., National Taiwan University, Taipei
Westchester County, NY 10589, USA | whsu@ntu.edu.tw | <http://winstonhsu.info>

Research Interests

Advancing machine intelligence and deep learning over large-scale multimodal data streams including image, video, audio, text, geo-locations, time series, etc., for retrieval, recognition, detection, mining, and recommendation. Realizing advanced researches towards business deliverables.

Education

- **Ph.D. in Electrical Engineering** – Columbia University, New York, USA (01/2007)
Dissertation: “An Information-theoretic Framework towards Large-Scale Video Structuring, Threading, and Retrieval”
Advisor: Prof. Shih-Fu Chang, Department of Electrical Engineering
- **M.S. in Computer Science** – National Taiwan University, Taipei, Taiwan (07/1995)
Department of Computer Science and Information Engineering
Advisor: Prof. Jau Huang

Professional Experience

- **IBM TJ Watson Research Center**, Yorktown Heights, New York, USA
Visiting Scientist - Cognitive Computing (07/2016 – present)
Computer Vision Department, Watson AI Division
- **NVIDIA AI Lab** – National Taiwan University, Taipei, Taiwan
Founding Director; awards with gift money and supercomputer DGX-1 from NVIDIA US the first in Asia and the 5th in the world; enabling neural-networks-based multimodal question and answering capabilities (10/2016 – present)
- **National Taiwan University**, Taipei, Taiwan
Professor (08/2015 – present)
Associate Professor (2011 – 2015); *Assistant Professor* (2007 – 2011)
Department of Computer Science and Information Engineering & Graduate Institute of Networking and Multimedia
- **Microsoft Research**, Redmond, Washington, USA
Visiting Scientist (06/2014 – 09/2014)
leveraging web-scale images for training deep convolutional neural networks for scalable image recognition

- **CyberLink Corp.**, Taipei, Taiwan
 Founding Engineer and R&D Manager (06/1997 – 06/2001)
 The 8th employee for the startup, now a public multimedia software company (5203.TW). Leading 13 engineers, growing the team, and reporting to CEO directly.

Awards and Honors (Selected)

- 2016 IBM Research Image Award. The technology, industry, and media impacts for the first AI trailer, Morgan. Jan. 2017
- NVIDIA AI LAB (the 1st in Asia). Awards with 4-year gift money and supercomputer DGX-1, presented by NVIDIA CEO/Co-Founder Jen-Hsun Huang. Oct. 2016
- Microsoft Research Asia Collaborative Research Award. Deep learning methods for fashion photo chatbot. Nov. 2016
- ACM Multimedia 2014 Grand Challenge Multimodal Award. A premier recognition for solving industry challenges in the top conference. Nov. 2014
- 2013 National Outstanding IT Elite Award (傑出資訊人才獎). National awards for recognizing advanced research and industry collaborations. Dec. 2013
- ACM Multimedia 2013 Grand Challenge Multimodal Award. Oct. 2013
- FIRST PLACE in MSR-Bing Image Retrieval Challenge 2013. Hosted by Microsoft Research Redmond and Bing. Award presented by Microsoft CTO Dr. Harry Shum in Seattle, WA. Oct. 2013
- Two times (2012-2014/2014-2017) Ministry of Science and Technology (MOST) Young Researcher Award. Selective research grants for prominent young researchers. July 2012/2014
- 2012 NTU EECS Research Contribution Award. 6 winners only, top 3% among 180 faculties in EECS school. July 2012
- Microsoft Research Asia Collaborative Research Award. 2012 Microsoft Research Asia Windows Phone Theme Program. Apr. 2012
- FIRST PRIZE for ACM Multimedia Grand Challenge 2011. Photo Search by Face Positions and Facial Attributes on Touch Devices. Dec. 2011
- 2011 National Science Council (NSC) Ta-You Wu Memorial Award (吳大猷先生紀念獎). A national and prestigious recognition for young researchers. August 2011
- Microsoft Research Asia Collaborative Research Award. Jan. 2009

Leadership

- Having founded MiRA (Multimedia indexing, Retrieval, and Analysis) research group and co-leading Communication and Multimedia Lab (CMLab). Advising totally 8 PhD, 65+ master, 10+ undergraduate students, and two postdocs in the BEST CS department in Taiwan

- Founding engineer and R&D manager of the prominent multimedia software CyberLink, now public (5203.TW), profitable, and multinational. Growing and leading 13 engineers, 11 of whom have master degree, with direct report to CEO. Responsible for project coordination
- Active in international (IEEE and ACM) multimedia communities and playing import roles in organizing major conferences and technical committees. Serving a few times as Technical Program Co-Chair and boosting community engagements (e.g., record-high submission in ICME 2017). Serving in the editorial boards for premier journals (e.g., IEEE Multimedia Magazine and IEEE Trans. on Multimedia)
- Opinion and technical leader in machine intelligence for Taiwan-based IT industries. Strong industry-academia collaborative projects in machine intelligence. Several media interviews regarding the technical and industrial trends.

Delivered Systems

- The first AI trailer by IBM Watson. Contributing CNN-based object and place recognition and mining effective visual aspects for trailer generation (Sep. 2016)
- Top-3 performer for brain tumor segmentation in BRATS benchmark and published in CVPR (2017)
- Contributing the image to text neural networks for novel “Image to Poetry” (看圖造詩) technical core in Microsoft chatbot “xiaoice” (小冰) (2017) [Live demo: <http://poem.msxiaobing.com/>]
- Technology transfer and technical consultancy in Lite-On (光寶) for advanced CNN frameworks for video surveillance (2016-)
- Technical consultancy and growing deep learning team for Synology (群暉) in devising deep-learning-based consumer photo management solutions on face and image recognition (2016~)
- Technical consultancy and growing deep learning team for CyberLink (Perfect Corp.) on image categorization and human/clothing attribute recognition (2016-)
- Fashion trend mining from fashion show photos and social media by clothing attribute detection. Widely reported by the media (e.g., New York Post, MIT Technology Review, etc.)
- Delivering superhuman cross-age face recognition and public cross-age benchmarks (2015)
- 3-year industry-academia collaborative project for efficient convolutional neural networks model (compression) for augmenting MediaTek Deep Learning Platform (2014-)
- Proposed “image reranking,” Best Paper Runner-Up in ACM Multimedia 2006, adopted by numerous image search engines (2007)
- One of the early teams investigating video search and achieving top performance in NIST TRECVID benchmarks. Contributing Large Scale Concept Ontology for Multimedia (LSCOM) (2005)
- One of the incubated products, *VideoLive Mail*, receiving several international awards and taking 75% OEM market share, as a project leader and then product manager in CyberLink Corp.

Major Demos (Selected)

- The first movie trailer generated by AI system (IBM TJ Watson Research Center); 2,960,000 views
<https://www.youtube.com/watch?v=gJEzuYynaiw>
- Image to Poetry by Cross-Modality Understanding with Deep Neural Networks
https://youtu.be/j_CunOOaolY
- Cross-Domain Image-Based 3D Shape Retrieval by View Sequence Learning
<https://youtu.be/hnl4MLo4gdg>
- Consumer photo search by facial attributes and face layout on touch devices
<http://www.youtube.com/watch?v=VC-t3UztT5g>
- Sketch-based image retrieval on mobile devices using compact hash bits
<http://www.youtube.com/watch?v=wK6dlt7w4E8>

Professional Services

Editorial Boards

- Editorial Board for IEEE Multimedia Magazine
- Associate Editor for IEEE Transaction on Multimedia
- Guest Editor for IEEE Multimedia Magazine Special Issue, "Knowledge Discovery over Community-Contributed Multimedia Data: Opportunities and Challenges," 2010

Conference/Workshop Chairs and Committee Members (Selected)

- Innovation Co-Chair for IEEE International Conference on Image Processing (ICIP) 2019
- Workshop Co-Chair for ACM International Conference in Multimedia Retrieval (ICMR) 2018
- Technical Program Co-Chair for IEEE ICME 2017 [the flagship IEEE multimedia conference] (Record-high submissions for the (850) regular papers)
- Technical Program Co-Chair for ACM ICMR 2016 [the flagship ACM multimedia conference]
- Industry Co-Chair for Asian Conference on Computer Vision (ACCV) 2016
- Elected member for IEEE Multimedia Systems & Applications (MSA) Technical Committees
- Elected member for IEEE Multimedia Signal Processing (MMSP) Technical Committees
- Senior Member of both the IEEE and the ACM
- IEEE Senior Member Application Review Panel (April 2015).
- Organizing Committee for ACM Multimedia (2010/2012/2013/2016)
- Organizing Committee for ICMR 2015/2016/2018, ICME 2009/2017, PCM 2013/2014, MMM 2013
- Technical Program Committee for ACM Multimedia 2009-2015, SIGIR 2011/2013/2015-2017, WWW 2011, ICCV 2015/2017, CVPR 2016/2017, CIKM 2011, ICME 2006-2016, IJCAI 2015

Scholarly Addresses

Keynote and Invited Presentations (Selected)

- “S7355: Learning Large-Scale Multimodal Data Streams: Ranking, Mining, and Machine Comprehension,” in NVIDIA GPU Technology Conference (GTC) 2017, with Hung-Yi Lee (with almost full lecture room, positive comments, and strong ratings including Speaker Rating: 4.5/5 & Content Rating: 4.36/5)
- Technical talk for deep-learning-based fashion photo commenting in Microsoft Research Asia Academic Day 2017, May 2017
- Keynote speech for International Workshop on Understanding Situations through Multimodal Sensing (uSitu’16), Singapore, January 2016.
- Invited talk for efficient visual learning in School of Computing, National University of Singapore (NUS), December 2015.
- Keynote speech for the 2nd ACM International Workshop on Interactive Multimedia on Mobile and Portable Devices (IMMPD2012) with ACM Multimedia 2012.
- Invited talk in The Second Multimedia and Vision Meeting in Greater New York Area, Columbia University, New York, June 15, 2012.
- Invited demo/talk in Cloud Futures 2012, Berkeley, California, May 7-8, 2012
- Invited talk in Digital Media Analysis, Search and Management DMASM 2012 International Workshop, San Diego, Feb. 27-28, 2012.
- Invited talk, "Mobile and Cloud-based Visual Search," HTC, January 18, 2012.
- Invited talk, "Mining Large-Scale Community-Contributed Photos," NUS, Singapore, July 18, 2011
- Invited talk, "Mining Large-Scale Community-Contributed Photos," NII, Japan, July 7, 2011
- Keynote speech for the 17th International Conference on Multimedia Modeling (MMM 2011)

Conference Tutorials

- “Content-based and Semantic-based Retrieval for Large-Scale Image / Video Collections”, in ACM Multimedia 2009, with Rong Yan (33 registration out of 104 total tutorial attendees among 8 tutorials, actually 52 audiences in the lecture)
- “Content-based and Semantic-based Image/Video Retrieval”, in ICASSP 2009, with Rong Yan
- “Recent Developments in Content-based and Concept-based Image/Video Retrieval”, in ACM Multimedia 2008, with Rong Yan (39 registration out of 130 total tutorial attendees among 8 tutorials)
- “Content-based and Semantic-based Image/Video Retrieval”, in SIGIR 2008, with Rong Yan (Rating: 4.4/5, vs. average tutorial rating: 3.9 / 5)

Publications (Selected)

[Google citations: 3940+, H-index: 30, i10-index: 57, as of June 2017]

Journal

1. Wei-Tse Sun, Ting-Hsuan Chao, Yin-Hsi Kuo, Winston H. Hsu. Photo Filter Recommendation by Category-Aware Aesthetic Learning. In *IEEE Transactions on Multimedia*, 2017. [Accepted]
2. Wen-Yu Lee, Winston H. Hsu. Learning from Cross-Domain Media Streams for Event-of-Interest Discovery. In *IEEE Transactions on Multimedia*, 2017. [Accepted]
3. Yin-Hsi Kuo, Winston H. Hsu. De-Hashing: Server-Side Context-Aware Feature Reconstruction for Mobile Visual Search. In *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, Volume 27, No 1, Pages 139-148, 2017.
4. Bor-Chun Chen, Yan-Ying Chen, Yin-Hsi Kuo, Thanh Duc Ngo, Duy-Dinh Le, Shin'ichi Satoh, Winston H. Hsu. Scalable Face Track Retrieval in Video Archives using Bag-of-Faces Sparse Representation. In *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, Volume 27, No 7, Pages 1595 - 1603, July 2017.
5. Bor-Chun Chen, Chu-Song Chen, Winston H. Hsu. Face Recognition and Retrieval Using Cross-Age Reference Coding with Cross-Age Celebrity Dataset. In *IEEE Transactions on Multimedia*, Volume 17, No 6, Pages 804-815, 2015.
6. Yu-Chuan Su, Tzu-Hsuan Chiu, Yin-Hsi Kuo, Chun-Yen Yeh, Winston H. Hsu. Scalable Mobile Visual Classification by Kernel Preserving Projection Over High-Dimensional Features. In *IEEE Transactions on Multimedia*, Volume 16, No 6, Pages 1645-1653, October 2014.
7. Yan-Ying Chen, Winston H. Hsu, Hong-Yuan Mark Liao, Automatic Training Image Acquisition and Effective Feature Selection from Community-Contributed Photos for Facial Attribute Detection. In *IEEE Transactions on Multimedia*, Pages 1388-1399, October 2013.
8. Yan-Ying Chen, An-Jung Cheng, Winston H. Hsu. Travel Recommendation by Mining People Attributes and Travel Group Types from Community-Contributed Photos. In *IEEE Transactions on Multimedia*, Volume 15, No 6, Pages 1283-1295, October 2013.
9. Bor-Chun Chen, Yan-Ying Chen, Yin-Hsi Kuo, Winston H. Hsu. Scalable Face Image Retrieval Using Attribute-Enhanced Sparse Codewords. In *IEEE Transactions on Multimedia*, Volume 15, No 5, Pages 1163-1173, August 2013.
10. Yin-Hsi Kuo, Wen-Huang Cheng, Hsuan-Tien Lin, Winston H. Hsu, Unsupervised Semantic Feature Discovery for Image Object Retrieval and Tag Refinement. In *IEEE Transactions on Multimedia*, Volume 14, No 4, Pages 1079-1090, August 2012.
11. Hsiao-Hang Su, Tse-Wei Chen, Chieh-Chi Kao, Winston H. Hsu, Shao-Yi Chien. Preference-Aware View Recommendation System for Scenic Photos Based on Bag-of Aesthetics-Preserving Features. In *IEEE Transactions on Multimedia*, Volume 14, No 3, Page 833-843, June 2012.

12. Yen-Liang Lin, Ming-Kuang Tsai, Winston H. Hsu, Chih-Wei Chen. Investigating 3-D Model and Part Information for Improving Content-based Vehicle Retrieval. In *IEEE Transactions on Circuits and Systems for Video Technology*, Volume 23, No 3, Pages 401-413, March 2013.
13. Guan-Long Wu, Yin-Hsi Kuo, Tzu-Hsuan Chiu, Winston H. Hsu, and Lexing Xie. Scalable Mobile Video Retrieval with Sparse Projection Learning and Pseudo Label Mining. In *IEEE Multimedia Magazine*, Volume 20, No 3, Pages 47-57, July-Sept. 2013.
14. Liang-Chi Hsieh, Guan-Long Wu, Yu-Ming Hsu, Winston H. Hsu. Online Image Search Result Grouping with MapReduce-based Image Clustering and Graph Construction for Large-Scale Photos. In *Journal of Visual Communication and Image Representation*, Volume 25, No 2, Pages 384-395, 2014.
15. Wen-Yu Lee, Liang-Chi Hsieh, Guan-Long Wu, Winston H. Hsu. Graph-based Semi-Supervised Learning with Multi-Modality Propagation for Large-Scale Image Datasets. In *Journal of Visual Communication and Image Representation*, Volume 24, No 3, Pages 295-302, April 2013.
16. Tao Mei, Winston H. Hsu, Jiebo Luo. Knowledge Discovery from Community-Contributed Multimedia. In *IEEE Multimedia Magazine*, Pages 16-17, October-December 2010.
17. Yi-Hsuan Yang, Winston H. Hsu, Homer H. Chen. Online Reranking via Ordinal Informative Concepts for Context Fusion in Concept Detection and Video Search. In *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, Pages 1880-1890, December 2009.
18. Winston H. Hsu, Lyndon Kennedy, Shih-Fu Chang. Reranking Methods for Visual Search. In *IEEE Multimedia Magazine*, Volume 14, Issue 3, Pages 14-22, July-September 2007.
19. Milind Naphade, John R. Smith, Jelena Tesic, Shih-Fu Chang, Winston Hsu, Lyndon Kennedy, Alexander Hauptmann, and Jon Curtis. Large-Scale Concept Ontology for Multimedia. In *IEEE Multimedia Magazine*, Vol. 13, No.3, July-September 2006.

Conferences

Deep Convolutional Neural Networks

1. Meng-Ru Hsieh, Yen-Liang Lin, Winston H. Hsu. Drone-based Car Counting by Spatially Regularized Regional Proposal Network. In *International Conference on Computer Vision (ICCV) 2017*.
2. John R. Smith, Dhiraj Joshi, Benoit Huet, Winston Hsu, and Zef Cota. Harnessing A.I. for Augmenting Creativity: Application to Movie Trailer Creation. In *ACM Multimedia 2017*.
3. Kuan-Lun Tseng, Yen-Liang Lin, Winston H. Hsu, Chung-Yang Huang. Joint Sequence Learning and Cross-Modality Convolution for 3D Biomedical Segmentation. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2017.
4. Hsin-Fu Huang, Wei-Hung Weng, Winston H. Hsu, Chi-Kuang Sun. Automated Detection of Noninvasive Imaging of Basal Cell Carcinoma by Convolutional Neural Network. In *NIPS 2015 Workshop on Machine Learning in Healthcare*.

5. Lee et al. Cross-Domain Image-Based 3D Shape Retrieval by View Sequence Learning. 2017 [submitted]
6. Zhang et al. Super-Identity Loss for Low-Resolution Face Hallucination and Recognition. 2017 [submitted]
7. Hui-Lan Hsieh, Winston H. Hsu, Yan-Ying Chen. Multi-task learning for face identification and attribute estimation. In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)* 2017.
8. Sebastian Agethen, Winston H. Hsu. Mediated experts for deep convolutional networks. In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)* 2016.
9. Chieh-En Tsai, Hui-Lan Hsieh, Winston H. Hsu. LDADEEP+: Latent aspect discovery with deep representations. In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)* 2016.
10. Peng-Ju Hsieh, Yen-Liang Lin, Yu-Hsiu Chen, Winston H. Hsu. Egocentric activity recognition by leveraging multiple mid-level representations. In *IEEE International Conference on Multimedia and Expo (ICME)*, 2016.
11. Yu-Hsiu Chen, Ting-Hsuan Chao, Sheng-Yi Bai, Yen-Liang Lin, Wen-Chin Chen, Winston H. Hsu. Filter-Invariant Image Classification on Social Media Photos. *ACM Multimedia* 2015.
12. Yuan-ming Liou, Hung-tsung Lu, Yi-sheng Fu, Winston H. Hsu, Lin-shan Lee. Enhancing Sparse Voice Annotation for Semantic Retrieval of Personal Photos by Continuous Space Word Representations. In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, April 2015.

Scalable (Efficient) Visual Learning

1. Ting-Hsuan Chao, Yen-liang Lin, Yin-Hsi Kuo, Winston H. Hsu. Scalable Object Detection by Filter Compression with Regularized Sparse Coding. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, June 2015.
2. Yu-Chuan Su, Tzu-Hsuan Chiu, Yan-Ying Chen, Chun-Yen Yeh, Winston H. Hsu. Enabling Low Bitrate Mobile Visual Recognition - A Performance versus Bandwidth Evaluation. In *ACM Multimedia*, Pages 73-82, October 2013.
3. Chia-Hung Lin, Yan-Ying Chen, Bor-Chun Chen, Yu-Lin Hou, Winston H. Hsu. Facial Attribute Space Compression by Latent Human Topic Discovery. In *ACM Multimedia*, Pages 1157-1160, November 2014.

Social Media and Data Log Mining

1. Yan-Ying Chen, Yin-Hsi Kuo, Chun-Che Wu, and Winston H. Hsu. Visually Interpreting Names as Demographic Attributes by Exploiting Click-Through Data. In *AAAI Conference on Artificial Intelligence*, Pages 44-50, January 2015.
2. Kuan-Ting Chen, Kezhen Chen, Peizhong Cong, Winston H. Hsu, Jiebo Luo. Who are the Devils Wearing Prada in New York City? In *ACM Multimedia* 2015.

3. Yan-Ying Chen, Winston H. Hsu, Hong-Yuan Mark Liao. Discovering Informative Social Subgraphs and Predicting Pairwise Relationships from Group Photos. In *ACM Multimedia*, October 2012.
4. Yan-Ying Chen, Winston H. Hsu, Hong-Yuan Mark Liao. Discovering Informative Social Subgraphs and Predicting Pairwise Relationships from Group Photos. In *ACM Multimedia*, October 2012.
5. An Jung Cheng, Yan-Ying Chen, Yen-TA Huang, Winston H. Hsu. Hong-Yuan Mark Liao. Personalized Travel Recommendation by Mining People Attributes from Community-Contributed Photos. In *ACM Multimedia*, Pages 83-92, November 2011.
6. Chun-Che Wu, Tao Mei, Winston H. Hsu, Yong Rui. Learning to Personalize Trending Image Search Suggestion. In *ACM SIGIR*, Pages 727-736, July 2014.
7. Yin-Hsi Kuo, Yan-Ying Chen, Bor-Chun Chen, Wen-Yu Lee, Chun-Che Wu, Chia-Hung Lin, Yu-Lin Hou, Wen-Feng Cheng, Yi-Chih Tsai, Chung-Yen Hung, Liang-Chi Hsieh, Winston H. Hsu. Discovering the City by Mining Diverse and Multimodal Data Streams. In *ACM Multimedia*, Pages 201-204, November 2014.

Large-Scale Image/Video Retrieval and Indexing

1. Yen-Liang Lin, Cheng-Yu Huang, Hao-Jeng Wang, Winston H. Hsu. 3D Sub-Query Expansion for Improving Sketch-based Multi-View Image Retrieval. In *International Conference on Computer Vision (ICCV)*, Pages 3495-3502, December 2013.
2. Bor-Chun Chen, Chu-Song Chen, Winston H. Hsu. Cross-Age Reference Coding for Age-Invariant Face Recognition and Retrieval. In *European Conference on Computer Vision (ECCV)*, Pages 768-783, September 2014.
3. Chiang-Yu Tsai, Yin-Hsi Kuo and Winston H. Hsu. Approximating Weighted Hamming Distance by Probabilistic Selection for Multiple Hash Tables. In *European Conference on Information Retrieval (ECIR)*, Pages 123-134, March 2015.
4. Chun-Che Wu, Kuan-Yu Chu, Yin-Hsi Kuo, Yan-Ying Chen, Wen-Yu Lee, Winston H. Hsu. Search-Based Relevance Association with Auxiliary Contextual Cues. In *ACM Multimedia*, 2013.
5. Yu-Heng Lei, Yan-Ying Chen, Bor-Chun Chen, Lime Iida, Winston H. Hsu, Where Is Who: Large-Scale Photo Retrieval by Facial Attributes and Canvas Layout. In *ACM SIGIR*, August 2012.
6. Yin-Hsi Kuo, Hsuan-Tien Lin, Wen-Huang Cheng, Yi-Hsuan Yang, Winston H. Hsu. Unsupervised Auxiliary Visual Words Discovery for Large-Scale Image Object Retrieval. In *IEEE Computer Vision and Pattern Recognition (CVPR)*, 8 Pages, June 2011.
7. Yin-Hsi Kuo, Kuan-Ting Chen, Chien-Hsing Chiang, Winston H. Hsu. Query Expansion for Hash-based Image Object Retrieval. In *ACM Multimedia*, Pages 65-74, October 2009.
8. Winston H. Hsu, Lyndon Kennedy, Shih-Fu Chang. Video Search Reranking through Random Walk over Document-Level Context Graph. In *ACM Multimedia*, September 2007.
9. Yi-Hsuan Yang, Po-Tun Wu, Ching-Wei Lee, Kuan-Hung Lin, Winston H. Hsu, Homer H. Chen. ContextSeer: Context Search and Recommendation at Query Time for Shared Consumer Photos. In *ACM Multimedia*, Pages 199-208, October 2008.

10. Winston H. Hsu, Lyndon S. Kennedy, Shih-Fu Chang. Video search reranking via information bottleneck principle. In *ACM Multimedia 2006*.
11. Yu-Heng Lei, Yan-Ying Chen, Lime Iida, Bor-Chun Chen, Hsiao-Hang Su, Winston H. Hsu. Photo Search by Face Positions and Facial Attributes on Touch Devices. In *ACM Multimedia*, Pages 651-654, November 2011.
12. Hong-Wun Jheng, Bor-Chun Chen, Yan-Ying Chen, Winston H. Hsu. Automatic Facial Image Annotation and Retrieval by Integrating Voice Label and Visual Appearance. In *ACM Multimedia*, Pages 1001-1004, November 2014.
13. Kai-Yu Tseng, Yen-Liang Lin, Yu-Hsiu Chen, Winston H. Hsu. Sketch-based Image Retrieval on Mobile Devices Using Compact Hash Bits. In *ACM Multimedia*, Pages 913-916, October 2012.
14. Chun-Che Wu, Yin-Hsi Kuo, Winston H. Hsu. Large-Scale Simultaneous Multi-Object Recognition and Localization via Bottom Up Search-Based Approach. In *ACM Multimedia*, Pages 969-972, October 2012.
15. Yen-Ta Huang, Kuan-Ting Chen, Liang-Chi Hsieh, Winston H. Hsu, Ya-Fan Su. Detecting the Directions of Viewing Landmarks for Recommendation by Large-Scale User-Contributed Photos. In *ACM Multimedia*, Pages 997-1000, October 2012.
16. Bor-Chun Chen, Yin-Hsi Kuo, Yan-Ying Chen, Kuan-Yu Chu, Winston H. Hsu. Semi-Supervised Face Image Retrieval Using Sparse Coding with Identity Constraint. In *ACM Multimedia*, Pages 1369-1372, November 2011.
17. Chun-Yen Yeh, Yu-Ming Hsu, Hsinfu Huang, Hong-Wun Jheng, Yu-Chuan Su, Tzu-Hsuan Chiu, Winston H. Hsu. Me-Link: Link Me to The Media - Fusing Audio And Visual Cues for Robust and Efficient Mobile Media Interaction. In *WWW*, Pages 147-150, April 2014.

Image/Video Recognition

1. Yen-Liang Lin, Vlad I. Morariu, Winston H. Hsu, Larry S. Davis. Jointly Optimizing 3D Model Fitting and Fine-Grained Classification. In *European Conference on Computer Vision (ECCV)*, Pages 466-480, September 2014.
2. Che-Chun Lee, Yin-Hsi Kuo, Winston H. Hsu, Shin'ichi Satoh, Sebastian Agethen. Efficient Cross-Domain Image Retrieval by Multi-Level Matching and Spatial Verification for Structural Similarity. In *ACM Multimedia*, Pages 1185-1188, November 2014.
3. Kuan-Yu Chu, Yin-Hsi Kuo, Winston H. Hsu. Real-Time Privacy-Preserving Moving Object Detection in the Cloud. In *ACM Multimedia*, Pages 597-600, October 2013.
4. Yu-Chuan Su, Tzu-Hsuan Chiu, Guan-Long Wu, Chun-Yen Yeh, Felix Wu, Winston H. Hsu. Flickr-tag Prediction using Multi-modal Fusion and Meta Information. In *ACM Multimedia*, Pages 353-356, October 2013.
5. Yung-Chien Hsu, Yen-Liang Lin, Winston H. Hsu. Learning-based Heart Rate Detection from Remote Photoplethysmography Features. In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Pages 4433-4437, May 2014.

6. Tat-Seng Chua, Shih-Fu Chang, Lekha Chaisorn, Winston H. Hsu. Story boundary detection in large broadcast news video archives: techniques, experience and trends. In *ACM Multimedia 2004*.

Academic Lectures

- Multimedia Analysis and Indexing (MMAI), Fall Semester, 2007 - 2016
- Advanced Topics in Multimedia Analysis and Indexing (aMMAI), Spring Semester, 2008 - 2016
- Database Management System, Fall Semester, 2007 - 2015

References (Available Upon Request)