

# Ching-Yung Lin

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## Biosketch:

Dr. Ching-Yung Lin is the **IBM Chief Scientist**, Graph Computing, and an IBM Distinguished Researcher. He is the founder and senior manager of the **Network Science and Machine Intelligence Department** in IBM T. J. Watson Research Center. He has been with IBM Research since 2000, after receiving his Ph.D. from Columbia University. Dr. Lin is also an Adjunct Associate/ Full Professor in the Departments of Electrical Engineering and Computer Science, Columbia University since 2005. He was an Affiliate Assistant/Associate Professor in the University of Washington from 2003 to 2009, and an Adjunct Professor in New York University (NYU) in 2014.

His research interests are on fundamental research of machine learning, artificial intelligence, data mining, multimodality signal understanding, network science, brain analysis, and applied research on security, commerce, and collaboration. Lin was elevated to IEEE Fellow for "*contributions to network science and multimedia security and retrieval*" in Nov 2011. He was the first IEEE fellow cited for contribution to Network Science. Dr. Lin founded and leads the Linked Big Data direction in IBM Research. Since 2011, he has been leading a team of more than 40 Ph.D. researchers in worldwide IBM Research Labs (Watson, Almaden, Cambridge, Austin, India, China, Brazil, and Australia) and more than 20 professors and researchers in 10 universities and institutes (Northeastern, Northwestern, Columbia, Minnesota, Rutgers, CMU, New Mexico, USC, UC Berkeley, and Stanford Research Institute).

He is leading a big R&D project of "**IBM System G**," which is dedicated to advance science, technology, and industry solutions based on cognitive networks and graph computing. He has been the Principal Investigator of many external funded (~\$25M) projects: DARPA Anomaly Detection at Multiple Scales (ADAMS), DARPA Social Media in Strategic Communications (SMISC), ARL Social and Cognitive Network Academic Research Center (SCNARC), DHS Mobile Security, and several other projects with major global companies and worldwide governments, across the industries of Public Sector, Financial Services Sector, Aerospace Sector, Telecommunication Sector, Healthcare Sector, and Energy Sector. He is also leading IBM worldwide research on cognitive solutions for investment & commercial banks and insurance, especially in the areas of Fraud, Surveillance, Risk, Compliance, Anti-Money Laundering, Espionage, Sabotage, etc, and led to create the first cognitive security product in the financial industry — IBM Surveillance Insight for Financial Services. His work in this Financial Service area has created \$40M+ contracts in the first year.

His team focuses on all aspects of large-scale **Graph Computing** -- graph database, high performance and distributed computing infrastructure, graph analysis library, and graph visualization. The goal is to create innovative foundation to solve the biggest challenge of Big Data when data are dependent. These tools include different types of graph databases, which outperform traditional relational databases in many modern applications. Graph Middleware considers different ways of optimization on platforms and Software Defined Environment. Graph Analytics include topological analysis, graph matching, graph search, graph path & flow tools. Graph visualization provides foundations for static, large-scale, and dynamic visualization for data exploration, visual analytics, and navigation. His team has been providing software that tops the Supercomputer society's Graph500 benchmark which achieved 38 billion graph traversal per second. Based on the graph computing foundation, on **Machine Intelligence**, his team has been making fundamental research on (1) Cognitive Networks, including large-scale machine reasoning Markovian & Bayesian networks, Deep Machine Learning tools, and Brain Network Analysis Tools; (2) Cognitive Analytics, including visual semantic & sentiment analysis and text emotion analysis; (3) Spatiotemporal Analytics, including moving objects indexing, retrieval, and optimization; and (4) Behavioral and Mobile Analytics, including anomaly detection (fraud, espionage, and sabotage), and various recommenders. These tools have been applied to 7 Industry Solutions: Enterprise Social Analytics Solution, Insider Threat

Solution, Social Media Solution, Entertainment & Media Solution, Healthcare Solution, Home Care Solution, and Financial Services Solution. There are also more than 22 use cases on 5 Big Data categories: Data Exploration, 360 View, Security, Operation Analysis, and Data Warehouse. His team is consisted of researchers with backgrounds of Signal Processing, Network Science, Machine Learning, Information Retrieval, Natural Language Processing, High Performance Computing, Visualization, Economics, Database, *etc.*

He invented and created the SmallBlue system, an IBM production system for Enterprise Social Network Analysis, Expertise Search, and Knowledge Recommendation since 2008. SmallBlue helped IBM Corporation won the 1st place in 2012 Most Admirable Knowledge Enterprise (MAKE) Award in enterprise-wide collaboration knowledge-sharing environment. In May 2013, SmallBlue was selected by APQC, the World Leader in Knowledge Sharing Benchmarking and Practices, as the Industry Leader and Best Practice in Expertise Location. In October 2013, SmallBlue was recognized as having made \$117M+ productivity contribution to IBM.

Dr. Lin's innovative Cognitive Security system focuses on anomaly detection of behaviors and had the best performance in the program reviews. It has been used for insider threat detection such as espionage, sabotage, or fraud detection. Another system -- SMISC focuses on social media monitoring, forensics, and predictive analysis. Lin leads 9 universities on this direction, which alone includes 26 research projects on various aspects of social media analysis. Lin demonstrated both systems in Pentagon in May 2014 and attracted more than 200 audiences.

Ching-Yung is an author of 170+ publications and 26 awarded patents (Google Scholar: 10,000+ citations, hindex: 47, first-author paper citations: 4,000+). In 2010, IBM Exploratory Research Career Review selected Dr. Lin as one of the five researchers "**mostly likely to have the greatest scientific impact for IBM and the world.**"

He is teaching "Big Data Analytics" and "Advanced Big Data Analytics" graduate courses in Columbia University in the Fall and Spring semesters. In the course evaluations of the last 4 years, in total, 53% of the students rated Prof. Lin's overall teaching as 'excellent' and 28% rated 'very good'. In a 1-5 scale, the mean was 4.25 and the median was 5 (excellent). His classes attract more than 300 students per year, and the "Big Data Analytics" is the largest graduate class in the departments of Electrical Engineering and Computer Science. Since December 2014, Ching-Yung's course webpage has been ranked within the top 20, out of 66 million webpages on Google search of Big Data Analytics and has been the highest (or near the highest) ranked big data lectures among worldwide academic institutions in Google search. In 2016, it was ranked as Top 2 in Baidu mobile search on Big Data Analytics.

He previously taught "Multimedia Security" (2005-2007) and "Network Science" (2010-2013) courses in Columbia. He taught "Complex Social and Cognitive Analytics (2014)" in NYU. During his 6-year tenure as an affiliate professor in the University of Washington, he co-advised two Ph.D. students on recommendations and sensor mining. (They are now working in Google and Intel). He also co-advised a Ph.D. student in National Taiwan University, working on encrypted-domain data mining and knowledge graph for search expansion, and co-advised a Ph.D. student in MIT Sloan Management School on workplace social impact on productivity (now assistant professor in U Penn Wharton Business School).

Lin was one of the earliest machine learning researchers on large-scale visual understanding & reasoning. In 2003, Lin created and led 111 researchers in 23 worldwide research institutes for the first large-scale collaborative video semantic annotation project. In 2005, he pioneered the design of a semantic filtering framework which detects more ~150 visual concepts in videos. His multimedia semantic mining project team performed best in the annual US National Institute of Standards and Technology (NIST) semantic video concept detection benchmarking 2002-2004. He also pioneered the design of video/image content authentication systems and a watermarking system surviving print-and-scan process.

He has been serving as panelist, technical committee member, and invited speaker at various IEEE/ACM/SPIE conferences, National Science Foundation (in U.S. and Hong Kong), and U.S. government. He is the Chair of IEEE CAS society Multimedia Systems and Applications Technical Committee 2010-2011 and the General Chair of IEEE Intl. Conf. on Multimedia & Expo (ICME) 2009 and IEEE Intl. Conf. on Semantic Computing 2015. He is also the founding steering committee chair

of ACM SIG Health Informatics IHI 2010-2012. He is a keynote/plenary speaker at Web 2.0 Expo 2009 and 14 other conferences/workshops, the Editor of the Interactive Magazines (EIM) of the IEEE Communications Society 2004-2006, an associate editor of the IEEE Trans. on Multimedia 2004-2007, and an editorial board member of Journal of Visual Communication and Image Representation 2005-2009. He is a guest editor of (1) the Proceedings of the IEEE Special Issue on Multimedia Security, June 2004, (2) EURASIP Journal of Applied Signal Processing Special Issue on Visual Sensor Networks, September 2006, (3) IEEE Trans. on Multimedia, Special Issue on Communities and Media Computing, April 2009, (4) IEEE Journal on Selected Areas in Communications (JSAC) Special Issue on Network Science, June 2013, and (5) Journal of Multimedia Special Issue on Social Multimedia Computing, Jan 2014. He was a Technical Program co-chair of IEEE ITRE 2003. He represented IEEE CAS society in the Steering Committee of IEEE Trans. on Multimedia (2010-2011) and represents CAS in the founding Steering Committee of IEEE Trans. on Network Science and Engineering (2013-). He is an Associate Editor of IEEE Trans. on Big Data and IEEE Trans. on Signal and Information Processing in Networks. He was invited by the American Medical Association to be a panelist on Big Data, together with the United States Chief Data Scientist of White House and the Co-Founder of HealthNEXT in Nov. 2015, hosted by the AMA President.

Lin is a recipient of 2003 IEEE Circuits and Systems Society Outstanding Young Author Award, IBM Invention Achievement Awards in 2001, 2003, 2007, 2010 and 2011 & 2013, IBM Research Division Award 2005 & 2013, IBM Corporate Outstanding Innovation Award 2011, 2013 & 2014, Association of Information Systems (AIS) Intl. Conf. on Information Systems (ICIS) 2011 Best Theme Paper Award, Acer Best EECS Thesis Award 1993, and the Outstanding Paper Award in CVGIP 1993. His work was featured 4 times by the BusinessWeek magazine, including being the Top Story of the Week on April 9<sup>th</sup>, 2009. His team won the Best Paper Awards in ACM Intl. Conf. on Knowledge and Information Management (CIKM) 2012 and IEEE International Congress on Big Data (BigData) 2013. His extended team's papers were selected as the cover paper of Proc. of National Academy of Science (Jan 2013), and were on Science and Nature (twice).

Dr. Lin is a Fellow of IEEE, and IEEE Distinguished Lecturer, a Director of Industrial Governance Board of APSIPA (Asia-Pacific Signal and Information Processing Association), and a Member of the Academy of Management.

## Education

<b>Ph.D.</b>	Electrical Engineering	Columbia University, New York, NY	2000
	Specialization: Multimedia Analysis and Security (GPA:4.0/4.0)		
<b>M.S.</b>	Electrical Engineering	National Taiwan University, Taipei, Taiwan	1993
	Specialization: Image and Video Processing (Highest GPA 92.22 in Communications and Signal Processing)		
<b>B.S.</b>	Electrical Engineering	National Taiwan University, Taipei, Taiwan	1991
	Specialization: Communications and Signal Processing		

## Work Experience

<b>IBM Chief Scientist, Graph Computing (2015-)</b>	IBM T. J. Watson Research Center, Yorktown Heights, NY	10/2009 to present
<b>Distinguished Researcher (2015-)</b>	Dept. of Network Science and Machine Intelligence	
<b>Senior Manager (2015-)</b>		
<b>Manager (2012-2015)</b>		
<b>Founder and Principal Investigator (2009-2012)</b>		

- Leading IBM worldwide research on cognitive solutions for investment & commercial banks and insurance, especially in the areas of Fraud, Surveillance, Risk, Compliance, Anti-Money Laundering, Espionage, Sabotage, etc, and led to create the first cognitive security product in the financial industry — IBM Surveillance Insight for Financial Services. His work in this Financial Service area has created \$40M+ contracts in the first year.
- (October 2009 – 2019) IBM Principal Investigator of Social and Cognitive Network Academic Research Center (SCNARC) (Phase I: \$3.5M), funded by US Army.
- Principal Investigator leading IBM Research (Watson, Cambridge, and Almaden) and 8 U.S. Universities (CMU, Columbia U, Northeastern U, Northwestern U, U of Minnesota, USC, UC Riverside, and Rutgers U) to win two DARPA projects: ADAMS (\$8.0 Million, June 2011 – June 2015), and SMISC (\$10.1 Million, Feb 2012 – Jan 2015). These projects are supporting ~35 researchers in IBM Research (full-time or part-time).
- Elected IEEE Fellow in Nov. 2011 for the “contributions to network science and multimedia security and retrieval.”
- Leading IBM fundamental research of network science, focusing on: (1) scientific challenge of large-scale and real-time network processing system; (2) economic value of networks; (3) multi-channel relationships and collective behavior of people; and (4) cognitive (brain) signal processing. The goals are to make real large-scale system for computational social science researches and to understand people behavior from cognitive level to societal level, based on signal processing and data mining.
- Leading IBM applied research of network science, focusing on: (1) collaborations, including expertise mining & search, social network visual analytics, shortest social paths, and personalized recommenders & search; (2) security, including anomaly detection, privacy research of law level, data mining level and cryptographic level, and authentication & data leakage prevention; and (3) commerce, including social selling and marketing.

- Leading IBM SmallBlue Projects, including SmallBlue Enterprise Edition ( for customer selling via IBM Atlas brand and IP licensing), SmallBlue Internet Edition (collaborating with NIH), SmallBlue Security Edition (IBM Cybersecurity Center Offering), and SmallBlue Commerce Edition (IBM Commerce Industry Solution Offering).
- Leading IBM System G Project to create IBM Big Data Graph and Graphical Analysis System including Database, Hardware Acceleration, Analytic Algorithm Tools, and Visualization Tools. This project includes worldwide IBM Research Labs (16 researchers of 4 departments in Watson Center, 2 researchers in Australia Lab, 1 researcher in India Lab, 2 in China Lab, and 1 in Brazil Lab).
- (2010 – 2011) Led fundamental scientific research Project S1 of SCNARC: including 18 PIs in 14 institutes for “Value of Network Interactions” (IBM, CUNY, Notre Dame U., Carnegie Mellon U., UC Santa Barbara, U. Minnesota, RPI, MIT, U Michigan, BBN, Stanford, USC, Northeastern U., and Penn State U.)
- (2009 – 2010) Led fundamental scientific research Project S1 of SCNARC: including 18 PIs in 13 institutes for “Networks in Organization”. ( IBM, CUNY, MIT, Northeastern U, RPI, Notre Dame, Indiana U., U. Minnesota, Carnegie Mellon U., NYU, Northwestern U, Harvard, and U of Michigan)
- (June 2010) Selected as one of the five “IBM researchers most likely to have the greatest scientific impact for IBM and the world”. [IBM Exploratory Science Career Review].
- (January 2012) Co-Principal Investigator of the 2012 GBS-RES Smarter Commerce including 5 Research PY and 5 GBS resource. This project is the biggest project of GBS-RES joint program in 2012.
- (June 2012) Added HR management responsibility as a Manager.
- (April 2014) Appointed IBM Principal Researcher.
- (June 2015) Appointed Senior Manager, leading three (Project) Managers.
- (April 2015) Appointed IBM Chief Scientist, Graph Computing; one of less than 10 Chief Scientists in the worldwide IBM corporation of 400,000 employees.
- (April 2015) Appointed IBM Distinguished Researcher (for the Top 1% of worldwide researchers)

<b>Research Staff Member and Project Lead</b>	IBM T. J. Watson Research Center, Hawthorne, NY Dept. of Stream Processing / Dept. of Collaboration Technologies	01/2006 to 09/2009
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- Invented and created the Small Blue system in early 2006. I invented SmallBlue for (1) solving the enterprise expertise search for collaboration, (2) quantifying social capital of individuals and best social paths to reach people, (3) analyzing social positions of any group of people in enterprise, (4) providing personalized content recommendation and search based on ranking of content interests and collective behavior of multi-degree personal social network. This was an era before the take-off of social media, and a novel solution to address one of the biggest challenge of utilizing observable data (i.e. novel social sensors) to understand people (see appendix).
- SmallBlue was transferred to product-level asset by IBM Global Business Services (2007) and IBM Lotus Software, called IBM Atlas (2008).
- Led and guided a multi-division global team of more than 30 researchers and engineers for the Research and Development of Small Blue. Team members include: researchers in New York, Boston, and Beijing; developers in Shanghai and Moscow; system maintenance & deployment in Mumbai, help desk in Tampa; and user interface redesign in London.
- IBM Global Business Service estimation of internal financial contribution to IBM in 2009: \$31 million.
- IBM Atlas was sold and deployed to AT&T, Pepsi Co., United Nations, Ernst & Young, Coca Cola, the World Bank, Royal Bank of Scotland (RBS), Federal Aviation Association (FAA).

- Research being featured in 120+ media articles, including BusinessWeek, BBN, MIT Review, Forbes, etc.
- Reported 4 times by BusinessWeek:
  - Jan. 17, 2008, “International Isn’t Just IBM’s First Name,” SmallBlue was discussed as the concluding paragraphs – “IBM introduced a version of Small Blue called IBM Atlas for sale to customers. The company is positioning itself as a helping hand to other corporations who are taking similar paths to globalization.....”
  - May 22, 2008: “Big Blue Embraces Social Media,” it shows “Atlas culls information from e-mail and instant chat, and helps people map and visualize their networks of contacts. .... Atlas (helps) Lotus Connections being the fastest-growing software product in IBM history.”
  - April 8, 2009: BusinessWeek’s Top Story of Week, an article featuring one of SmallBlue’s researches: “Putting a Price on Social Connection”.
  - May 21, 2009: BusinessWeek Cover Story, “One team at IBM Research, studying anonymous data of Big Blue’s consultants, concluded that employees who forged tighter e-mail connections with their boss brought in on average \$588 more in monthly revenue.,,.,,”
- One+ Magazine, Jan 2009. Special article of “Social Currency” , which features my research career towards SmallBlue and with intensive photos.
- Research statement in 2005 of making signal processing and data mining to make an entire shift of paradigm on Computational methods for Social Science was cited by “History of Social Science” in Wikipedia in 2009, for the statement of progress of social science.

<b>Research Staff Member</b>	IBM T. J. Watson Research Center, Hawthorne, NY Dept. of Stream Processing	07/2004 to 12/2005
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- Led projects on Large-Scale Distributed Real-Time Video and Multimodality Analysis for US government.
- Research on distributed signal processing, machine autonomous learning, machine learning theory on noisy data, and multimodality human behavior modeling.

<b>Research Staff Member</b>	IBM T. J. Watson Research Center, Hawthorne, NY Dept. of Intelligent Business Information	10/2000 to 06/2004
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- Invented the first large-scale video tagging system and led 111 researchers in 23 worldwide research institutes for a one-year video collaborative annotation project in 2003. This was one of the few critical works that set the future direction of large-scale data-driven video analytics research pursued by thousands of researchers today. It also successfully jump started the TRECVID video retrieval forum that has become extremely popular and attracted participation by hundreds of groups so far.
- Research on video semantic indexing, video semantic concept detection, multimodality understanding and intelligence analysis. A core founder of the IBM Marvel project in 2001-2004.
- Developed surveillance system based on images, videos and environmental information.
- Established standard-compliant multimedia personalization, summarization, editing and transcoding systems.
- Participated in the development of MPEG-7 and MPEG-21 standards and applications.

<b>Adjunct Professor</b>	Department of Computer Science and Engineering, New York University, Brooklyn, NY	1/2014 to 5/2014
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- Teaching courses: *Complex Social & Cognitive Analytics* (Spring 2014)

<b>Adjunct Professor</b>	Department of Electrical Engineering and Computer Science, Columbia University, New York, NY	9/2010 to present
<ul style="list-style-type: none"> <li>▪ Teaching courses: <i>Big Data Analytics</i> (Fall 2014, 2015), <i>Advanced Big Data Analytics</i> (Spring 2015, 2016), and <i>Network Science</i> (Fall 2010, Fall 2011, Fall 2012, Fall 2013)</li> <li>▪ Advising students on network science research projects.</li> </ul>		
<b>Adjunct Associate Professor</b>	Department of Electrical Engineering, Columbia University, New York, NY	1/2005 to 8/2007
<ul style="list-style-type: none"> <li>▪ Teaching courses: <i>Multimedia Security Systems</i> (Spring 2005, Summer 2005, Spring 2006, Summer 2007)</li> <li>▪ Advising students on smart video semantic sensor, expertise search, and personalized recommendation projects.</li> </ul>		
<b>Affiliate Associate Professor</b>	Department of Electrical Engineering, University of Washington, Seattle, WA	11/2005 to 10/2009
<ul style="list-style-type: none"> <li>▪ Co-advising Ph.D. students (with Prof. Ming-Ting Sun) on data mining and signal processing for human and social network analysis, and multimodality healthcare applications, in the Information Processing Lab.</li> </ul>		
<b>Affiliate Assistant Professor</b>	Department of Electrical Engineering, University of Washington, Seattle, WA	11/2003 to 10/2005
<ul style="list-style-type: none"> <li>▪ Co-advising Ph.D. students (with Prof. Ming-Ting Sun) on data mining and signal processing for human and social network analysis, and multimodality healthcare applications, in the Information Processing Lab.</li> </ul>		
<b>Research Assistant</b>	Columbia University, New York, NY	1/1997 - 9/2000
<ul style="list-style-type: none"> <li>• Designed and implemented the first successful semi-fragile content authentication system, which distinguishes standard-compliant compressions from malicious manipulation.</li> <li>• Modeled signal variation and pioneered a public watermarking technique for digital image print-and-scan process. Modeled complex visual system that mathematically maps human perception.</li> <li>• Established theorems of the information-hiding capacity of media data.</li> </ul>		
<b>Teaching Assistant</b>	Columbia University, New York, NY	9/1996 – 12/1999
<ul style="list-style-type: none"> <li>• TA for the Advanced Signal Processing course.</li> <li>• Developed an interactive multimedia system for Columbia Video Network, used in the Image/Video Processing course.</li> </ul>		
<b>Summer Intern</b>	NEC Research Institute, Princeton, NJ	5/1999 - 8/1999

- Designed and implemented public watermarking methods to survive geometric distortion.
- Modeled signal variation in DVD/VHS video transcoding process.

**Instructor** National Taiwan University, Taipei, Taiwan 8/1995 - 7/1996

- Instructed graduate students on the computer network programming and analysis lab course.
- Assisted to establish the computer network lab in National Taiwan University.
- Assisted to the management issues of the Telecommunication Center in National Taiwan University.

**R & D Engineer** EeRise Co., Taipei, Taiwan 12/1995 - 7/1996

- Designed a computer vision system for detecting sub-pixel object positions to correct monitor misconvergence.

**Air Force 2<sup>nd</sup> Lieutenant** Air Force, Chiayi Airport, Taiwan 7/1993 - 5/1995

- Maintained military ground-to-ground and ground-to-air communication systems including wireless base stations, handsets, control tower and radar station.

**Research Assistant** National Taiwan University, Taipei, Taiwan 8/1991-6/1993

- Developed algorithms for image/video coding, shape recognition, 2D filter design, and wavelet analysis.
- Designed systems for detection and segmentation of infrared targets; Benchmarking of phase array radar detectors.

## Selected Awards

- IEEE Fellow, Nov. 2011.  
-- *for contributions on network science and multimedia security and retrieval.*
- IBM Exploratory Science Career Review, Nov. 2010.  
-- *To discover and support "researchers most likely to have the greatest scientific impact for IBM and the world." Select no more than 5 researchers per year worldwide.*
- IEEE Distinguished Lecturer, March 2015.  
-- *on Big Data Analytics and Graph Computing.*
- IEEE Circuits and Systems Society Outstanding Young Author Award, 2003.  
-- *To honor an especially meritorious paper published in any one of the IEEE CAS Society's eight Transactions during the calendar years of 2001 and 2002 whose author at the date of submission is less than 30 years of age. The award is based on general quality, originality, contributions, subject matter and timeliness.*
- BusinessWeek Magazine Top Story of the Week, April 10, 2009.  
-- *The first large-scale research to quantify the value of social network; For instance, an additional friend contributes to \$948 dollars a year in revenue in organization.*
- IBM Outstanding Innovation Award, May 2011.



-- *SmallBlue contributions to GBS; for outstanding contribution to scientific impact and financial earning for IBM Corporation.*

- IBM Outstanding Innovation Award, May 2013.  
  
-- *Scientific contributions to Social and Cognitive Network Science; for outstanding contribution to scientific impact and innovation for science and technology.*
- IBM Outstanding Innovation Award, May 2014.  
  
-- *SmallBlue contributions; for outstanding accomplishment of contributing to more than \$100M revenue or productivity for IBM Corporation.*
- Best Theme Paper Award, Intl. Conf. on Information Systems (ICIS) 2011.  
  
-- *ICIS is the major annual meeting of the Association for Information Systems. It is the most prestigious gathering of academics and practitioners in the IS discipline. Each year, it selects a best paper for the conference theme. The theme of ICIS 2011 is to provide an opportunity to think more deeply about how information systems and information communication technologies can contribute to the connectivity and collaboration of people, organizations, countries and international institutions.*
- IBM Research Division Award, 2005 and 2013.
- IBM Invention Achievement Awards, 2001, 2003, 2007, 2010, 2011, and 2013.
- Best Performance in National Institute of Standards and Technology (NIST) TREC Video Semantic Concept Detection Benchmarking, 2002, 2003 & 2004.
- Best Performance in National Institute of Standards and Technology (NIST) TREC Video Retrieval, 2001, 2002. (2<sup>nd</sup> place: 2003)
- IEEE Circuits and Systems Society Service Award, 2006.
- Acer Best EECS Master Thesis Award in Taiwan (Lung-Terng Gold Award), 1993.
- Outstanding Paper Award, Conf. on Computer Vision, Graphics and Image Processing, 1993.
- Team Awards:
  - Best Paper Award, ACM International Conference on Information and Knowledge Management (CIKM) 2012.
  - Best Paper Award, IEEE Intl. Cong. On Big Data (BigData) 2013.
  - Cover Article, the Proceeding of National Academy of Science (PNAS), Jan 2013.

## Highly Cited Publications (h-index: 42, by August 2014):

1. Ching-Yung Lin, Min Wu, Jeffery Bloom, Ingemar Cox, Matt Miller, and, Yui Man Lui, "**Rotation, Scale, and Translation Resilient Watermarking for Images**," *IEEE Trans. on Image Processing*, 2001. (Cited by 897)

2. Ching-Yung Lin and Shih-Fu Chang, "**A Robust Image Authentication Method Distinguishing JPEG Compression from Malicious Manipulation**," *IEEE Trans. on Circuits and Systems for Video Technology*, Feb. 2001. (Cited by 580)
3. Ching-Yung Lin and Shih-Fu Chang, "**Semi-Fragile Watermarking for Authenticating JPEG Visual Content**," *SPIE Security and Watermarking of Multimedia Contents II*, EI '00, San Jose, CA, Jan. 2000 (Cited by 351)
4. A. Amir, W. Hsu, G. Iyengar, Ching-Yung Lin, M. Naphade, A. Natsev, C. Neti, H. J. Nock, J. R. Smith, B. L. Tseng, Y. Wu, D. Zhang, "**IBM Research TRECVID-2003 System**," *Proc. NIST Text Retrieval Conf. (TREC)*, Gaithersburg, MD, November, 2003. (Cited by 305)
5. Ching-Yung Lin and Shih-Fu Chang, "**A Robust Image Authentication Method Surviving JPEG Lossy Compression**," *SPIE Storage and Retrieval of Image/Video Database*, EI '98, San Jose, Jan. 1998. (Cited by 198)
6. Belle L. Tseng, Ching-Yung Lin and John R. Smith, "**Using MPEG-7 and MPEG-21 for Personalizing Video**," *IEEE Multimedia Magazine*, Jan.-Mar., 2004. (Cited by 153)
7. Bill Adams, Giri Iyengar, Ching-Yung Lin, Milind Naphade, Chalapathy Neti, Herriet Nock and John R. Smith, "**Semantic Indexing of Multimedia Content Using Visual, Audio and Text Cues**," *EURASIP Journal on Applied Signal Processing*, 2003 (Cited by 159)
8. Ching-Yung Lin and Shih-Fu Chang, "**Issues and Solutions for Authenticating MPEG Video**," *SPIE Security and Watermarking of Multimedia Contents*, EI '99, San Jose, CA, Jan. 1999. (Cited by 131)
9. Ching-Yung Lin, Belle L. Tseng and John R. Smith, "**Video Collaborative Annotation Forum: Establishing Ground-Truth Labels on Large Multimedia Datasets**," *Proc. of NIST Text Retrieval Conf. (TREC)*, Gaithersburg, MD, November 2003. (Cited by 119)
10. Jeffrey Bloom, Ingemar J. Cox, Matthew Miller, Min Wu, Ching-Yung Lin and Yui Man Lui, "**Rotation, Scale, and Translation Resilient Public Watermarking for Images using a Log-Polar Fourier Transform**", *United States Patent: US 6,282,300*. August 28, 2001. (Cited by 123)
11. Kate Ehrlich, Ching-Yung Lin and Vicky Griffiths-Fisher, "**Searching for experts in the enterprise: Combining text and social network analysis**," *ACM Group Conference*, Sanibel Island, FL, November 2007. (Cited by 142)
12. Xiaodan Song, Belle L. Tseng, Ching-Yung Lin and Ming-Ting Sun, "**Personalized Recommendation Driven by Information Flow**," *ACM SIGIR Conference*, Seattle, WA, August 2006. (Cited by 118)
13. Ching-Yung Lin and Shih-Fu Chang, "**Generating Robust Digital Signature for Image/Video Authentication**," *Multimedia and Security Workshop at ACM Multimedia 98*, Bristol, UK, Sept. 1998. (Cited by 122)
14. Wenjun Zheng, Heather Yu and Ching-Yung Lin, "**Multimedia Security Technologies for Digital Rights Management**," *Elsevier*, June 2006. (Cited by 113)
15. Ching-Yung Lin and Shih-Fu Chang, "**Distortion Modeling and Invariant Extraction for Digital Image Print-and-Scan Process**", *IEEE International Symposium on Multimedia*, Taipei, Dec. 1999. (Cited by 107)
16. Ching-Yung Lin, Min Wu, Jeffery Bloom, Matt Miller, Ingemar Cox, and Yui Man Lui, "**Rotation, Scale and Translation Resilient Public Watermarking for Images**," *SPIE Security and Watermarking of Multimedia Contents II*, EI '00, San Jose, CA, Jan. 2000. (Cited by 99)

17. Ching-Yung Lin and Shih-Fu Chang , "**Distortion Modeling and Invariant Extraction for Digital Image Print-and-Scan Process**," *Intl. Symp. on Multimedia Information Processing (ISMIP)* , Taipei, Taiwan, Dec. 1999. (Cited by 97)
18. Tian-Tsong Ng, Shih-Fu Chang, Ching-Yung Lin and Qibin Sun, "**Passive-Blind Image Forensics**" in *Multimedia Security Technologies for Digital Rights Management*, Elsevier , April 2006. (Cited by 103)
19. Shih-Fu Chang and Ching-Yung Lin, "**Method and Apparatus for Image Authentication**," *United States Patent: US 6,532,541*. March 31, 2003. (Cited by 88)
20. Ching-Yung Lin, Belle L. Tseng and John R. Smith, "**VideoAnnEx: IBM MPEG-7 Annotation Tool for Multimedia Indexing and Concept Learning**," *IEEE Intl. Conf. on Multimedia & Expo*, Baltimore, July 2003. (Cited by 77)
21. Xiaodan Song, Ching-Yung Lin, Belle L. Tseng and Ming-Ting Sun, "**Modeling and Predicting Personal Information Dissemination Behavior**," *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining*, Chicago, August 2005. (Cited by 81)
22. Winston Hsu, Shih-Fu Chang, Chih-Wei Huang, Lyndon Kennedy, Ching-Yung Lin and Giri Iyengar, "**Discovery and Fusion of Salient Multi-modal Features towards news Story Segmentation**," *SPIE EI 2004 – Storage and Retrieval for Media Databases*, San Jose, January 2004. (Cited by 72)
23. Ching-Yung Lin, Kate Ehrlich, Vicky Griffiths-Fisher, and Chris Desforges, "**SmallBlue: People Mining for Expertise Search**", *IEEE Multimedia Magazine*, January 2008. (cited by 80)
24. Belle L. Tseng, Ching-Yung Lin, and John R. Smith, "**Real-Time Video Surveillance for Traffic Monitoring System using Virtual Line Analysis**," *IEEE Intl. Conf. on Multimedia & Expo*, Lausanne, Switzerland, Aug. 2002 (Cited by 79)
25. Ching-Yung Lin, Nan Cao, Shixia Liu, Spiros Papadimitriou, Jimeng Sun, and Xifeng Yan, "**SmallBlue: Social Network Analysis for Expertise Search and Collective Intelligence**," *IEEE Intl. Conf. On Data Engineering*, 2009. (Cited by 83)
26. B. Adams, A. Amir, C. Dorai, S. Ghosal, G. Iyengar, A. Jaimes, C. Lang, Ching.-Yung Lin, A. Natsev, C. neti, H. J. Nock, H. Permuter, R. Singh, J. R. Smith, S. Srinivasan, B. L. Tseng, AT Varadaraju and D. Zhang, "**IBM Research TREC-2002 Video Retrieval System**," *NIST TREC-11 Text Retrieval Conference*, Gaithersburg, MD, Nov. 2002. (Cited by 58)
27. Ching-Yung Lin, "**Issues on Multimedia Authentication**," in *Multimedia Security: steganography and digital watermarking techniques for protection of intellectual property*, IGP, March 2004. (Cited by 57; counted in Oct 2011; missing in the latest Google Scholar)
28. Xiaodan Song, Belle L. Tseng, Ching-Yung Lin and Ming-Ting Sun, "**ExpertiseNet: Relational and Evolutionary Expert Modeling**," *Intl. Conf. on User Modeling*, Edinburgh, UK, July 2005. (Cited by 59)
29. Ching-Yung Lin and Shih-Fu Chang, "**SARI: Self-Authentication-and-Recovery Image Watermarking System**," *ACM Multimedia 2001*, Ottawa, Canada, Sept. 2001. (Cited by 71)
30. Ching-Yung Lin, "**Watermarking and Digital Signature Techniques for Multimedia Authentication and Copyright Protection**," *Ph.D. Thesis*, Columbia University, Dec. 2000. (Cited by 57)

31. Belle L. Tseng, Ching-Yung Lin and John R. Smith, "**Video Summarization and Personalization for Pervasive Mobile Devices**," *SPIE EI 2002 – Storage and Retrieval for Media Databases*, San Jose, Jan. 2002. (Cited by 64)
32. Belle L. Tseng, Ching-Yung Lin, Milind Naphade, Apostol Natsev and John R. Smith, "**Normalized Classifier Fusion for Semantic Visual Concept Detection**," *IEEE Intl. Conf. on Image Processing*, Barcelona, September 2003. (Cited by 54)
33. Winston Hsu, L. Kennedy, C.-W. Huang, S.-F. Chang, Ching-Yung Lin and G. Iyengar, "**News Video Story Segmentation using Fusion of Multi-Level Multi-Modal Features in TRECVID**," *IEEE Intl. Conf. on Acoustics, Speech, and Signal Processing*, Montreal, May 2004. (Cited by 52)
34. Sankar Basu, Ching-Yung Lin, Milind Naphade, John R. Smith, and Belle L. Tseng, "**Method and Apparatus for Active Annotation of Multimedia Content**," *US Patent App.* 10/056,546. (Cited by 57)
35. Dashun Wang, Zhen Wen, Hanghang Tong, Ching-Yung Lin, Chaomin Song, and Albert Barabasi, "**Information Spreading in Context**", *Proc. of the 20<sup>th</sup> Intl. Conf. on WWW*, 2011. (Cited by 60).
36. Zhen Wen and Ching-Yung Lin, "**On the Quality of Inferring Interests from Social Neighbors**", *Proc. of the 16<sup>th</sup> ACM SIGKDD*, 2010. (Cited by 50).
37. Ching-Yung Lin and Shih-Fu Chang, "**Zero-Error Information Hiding Capacity for Digital Images**," *IEEE Intl. Conf. On Image Processing*, Greece, Oct. 2001. (Cited by 45)
38. John R. Smith, Alejandro Jaimes, Ching-Yung Lin, Milind Naphade, Apostol Natsev, and Belle L. Tseng, "**Interactive Search Fusion Methods for Video Database Retrieval**," *IEEE Intl. Conf. on Image Processing*, 2003. (Cited by 43).
39. Ching-Yung Lin, "**Public Watermarking Surviving General Scaling and Cropping: an application for print-and-scan process**", *Multimedia and Security Workshop at ACM Multimedia*, Oct. 1999. (Cited by 47)
40. John R. Smith, Ching-Yung Lin, and Milind Naphade, "**Video Texture Indexing using Spatio-Temporal Wavelets**," *IEEE Intl. Conf. on Image Processing*, 2002. (Cited by 43).
41. Milind Naphade, Ching-Yung Lin, John R. Smith, Belle L. Tseng, and Sankar Basu, "**Learning to Annotate Video Databases**," *SPIE EI 2002 – Storage and Retrieval for Media Databases*, San Jose, Jan. 2002. (Cited by 43)
42. Dongqing Zhang, Ching-Yung Lin, Shih-Fu Chang, and John R. Smith, "**Semantic Video Clustering across Sources using Bipartite Spectral Clustering**," *IEEE Intl. Conf. on Multimedia and Expo*, 2004. (Cited by 43).

## Selected Recent Professional Activities

- **Editorships:**
  - **The Editor of Interactive Magazines (EIM): Communications Magazine, Network Magazine, and Wireless Magazine**, IEEE Communications Society (ComSoc), 2004-2007.
    - The Interactive Magazines Editorial Board is responsible for the multimedia enhancements, as well as the On-line interactive magazines only articles. Members of the Interactive Magazines Editorial Board are appointed by the Editor of the Interactive

Magazines (EIM). The EIM is a one of the eleven members at the ComSoc Magazines Board, with other ten Editor-in-Chiefs of ComSoc Magazines.

- **Associate Editor**, IEEE Trans. on Multimedia, 2004 – 2007.
- **Member of Editorial Board**, Journal of Visual Communication and Image Representation, 2005 – 2010.
- **Guest Editor**, Proceedings of the IEEE, *Special Issue on Enabling Security Technologies for Digital Rights Management*, June 2004.
- **Guest Editor**, EURASIP Journal on Applied Signal Processing, *Special Issue on Visual Sensor Network*, Sept. 2006.
- **Guest Editor**, IEEE Trans. on Multimedia, *Special Issue on Communities and Media Computing*, April 2009.
- **Guest Editor**, IEEE Journal of Selected Area in Communications (JSAC), *Special Issue on Network Science*, June 2013.
- **Guest Editor**, Journal of Multimedia, *Special Issue on Social Multimedia Computing*, January 2014.
- **Steering Committee**, IEEE Trans. on Multimedia, 2010-2011.
- **Steering Committee**, IEEE Trans. On Network Science and Engineering, 2013-present.
  
- **International Project and Organization Lead:**
  - **Chair** - *Video Collaborative Annotation*, supported by NIST, Library of Congress, and 23 other worldwide institutes, including 111 researchers, Feb 2003 – Nov 2003.
    - I initiated and led this first large-scale video annotation project. I also developed the first distributed collaborative video annotation system being used in this project. One hundred and eleven researchers participated. The goal was to establish semantic ontology and associate semantic ground-truth labels to a large video dataset of 63 GB. The objective was to establish a common large-scale database to foster the research of video understanding and semantic retrieval.
  - **Chair**, IEEE Circuits and Systems Society Multimedia System and Application Technical Committee, 2010-2011; **Secretary** 2008-2009.
  
- **International Conference Organization:**
  - **General Chair**, IEEE Intl. Conf. on Multimedia & Expo (ICME), Cancun, Mexico, June 2009.
    - ICME is the flagship multimedia conference in IEEE, jointly sponsored by IEEE Signal Processing Society, Communication Society, Circuits and Systems Society and Computer Society
  - **Technical Program Chair - Multimedia**, Wireless and Optical Communications Conference, Shanghai, October 2006.
  - **Technical Program Chair – Big Data**, Wireless and Optical Communications Conference, New York, May 2014.

- **Founding Steering Committee Chair**, *ACM SIG Health Informatics International Health Informatics Symposium*, 2010-2012. (Established a new SIG in ACM and it's flagship conference. )
- **Founding Steering Committee and Plenary Chair**, *IEEE Emerging Signal Processing Applications Conference (ESPA)*, Las Vegas, NV, Jan. 2012. (ESPA will be one of the 3 core conferences of IEEE SP society, in conjunction with ICASSP and ICIP, which are considered too academic. ESPA will focus on industry.)
- **Program Chair**, *IEEE Intl. Workshop on Social Multimedia*, Melbourne, July 2012.
- **General Chair**, *IEEE Intl. Workshop on Social Multimedia*, San Jose, July 2013.
- **Steering Committee**, *IEEE Intl. Conf. on Multimedia & Expo (ICME)*, 2005 – 2006, 2009 - 2011; **Chair**, June-Oct 2009.
- **Student Paper Award Chair - Multimedia**, *IEEE Intl. Conf. on Acoustic, Speech and Signal Processing (ICASSP)*, Honolulu, Hawaii, April 2007.
- **Student Paper Award Chair**, *IEEE Intl. Conf. on Multimedia & Expo (ICME)*, Toronto, July 2006.
- **Area Chair**, *Multimedia Content Analysis*, *IEEE Intl. Conf. on Multimedia & Expo (ICME)*, Toronto, July 2006.
- **Area Chair**, *Multimedia Understanding and Recognition*, *IEEE Intl. Symposium on Circuits and Systems (ISCAS)*, Kos, Greece, May 2006.
- **Registration Chair** – *IEEE Intl. Workshop on Multimedia Signal Processing (MMSp)*, Shanghai, Oct 2005.
- **Best Open-Source Software Chair** – *ACM Multimedia (ACMMM)*, Singapore, Nov 2005.
- **Student Paper Award Advisory Board** – *IEEE Intl. Conf. on Image Processing (ICIP)*, Genova, Sep 2005.
- **Area Chair**, *Multimedia Understanding and Recognition*, *IEEE Intl. Symposium on Circuits and Systems (ISCAS)*, Vancouver, May 2004.
- **Student Paper Award Chair** – *IEEE Intl. Conf. on Image Processing (ICIP)*, Singapore, Oct 2004.
- **Publicity Chair** – *IEEE Intl. Conf. on Multimedia & Expo (ICME)*, Taipei, July 2004.
- **Technical Program Chair**, *IEEE Intl. Conf. on Information Technology: Research and Education (ITRE)*, Newark, August 2003.
- **Chair**, *Watson International Workshop on Multimedia*, Yorktown Heights, June 2003.
- **Publicity Chair** – *IEEE Pacific-Rim Conference on Multimedia (PCM)*, Beijing, Dec 2001.
  
- **Keynote Speaker:**
  - **“Evolution of Big Data Platform,”** *the 2nd Data Science Conference*, Taipei, August 2015.
  - **“Linked Big Data Analysis”**, *IEEE International Congress on Big Data, Taipei Session*, May 2015.
  - **“Graph Computing for Connected Big Data”**, *IEEE International Workshop on Hot Topics in Big Data and Networking*, Shanghai, August 2014.

- **“Graph Technology for Semantic Analytics and Connected Big Data,”** the 8<sup>th</sup> IEEE International Conference on Semantic Computing, Newport Beach, CA, June 2014.
- **“Graph Computing and Social Cognitive Analytics for Connected Big Data”,** ACM Workshop on Large-Scale and Distributed Systems for Information Retrieval, New York, February 2014.
- **“What’s a Friend Worth? Knowing Your Social Capital,”** Web 2.0 Expo, New York Javits Convention Center, November 2009.
- **“Machine Learning and Mining from Multimodality Streams,”** IEEE Pacific-Rim Symposium on Image and Video Technology (PSIVT), Hsinchu, Taiwan, December 2006.
  
- **Plenary Speaker:**
  - **“Advancing Graph Computing for Cognitive Security,”** Intl. Conf. on Cyber Security, New York City, July 2016.
  - **“Making Insider Threat Solution — what did we learn from a decade of scientific journey,”** Cyber Psych Conference, Singapore, April 2016.
  - **“Multi-Modal Mobile Security Management for User Behavior Anomaly Detection and Risk Estimation,”** DHS S&T Mobility Community of Practice Workshop, Arlington, VA, April 2016.
  - **“Mobile Multimedia,”** IEEE International Symposium on Multimedia, Miami, FL, Dec. 2015.
  - **“Mine Your Business – Value and Impact of Implicit Social Networks,”** United States InfoSec Research Council (sponsored by 22 U.S. government departments and institutes), Arlington, VA, May 2010.
  - **“Mine Your Business – Value and Impact of Implicit Social Networks,”** United States Finance Roundtable, July 2010.
  - **“Multimedia Security Systems,”** Biometric for National Security and Defense Summit, Arlington, VA, Feb. 2008.
  - **“Collective Intelligence and Complex Network Analysis,”** National Digital Archive Workshop, Taipei, Taiwan, December 2008.
  - **“Large-Scale Video Surveillance System and Multi-Dimensional Social network Analysis,”** Emerging Digital Media Technologies Workshop, Hsinchu, Taiwan, December 2008.
  - **“Collective Intelligence and Complex Network Analysis,”** the 125<sup>th</sup> Eastern Forum of Science and Technology, Shanghai, China, December 2008.
  - **“Computational Economic Impact of Social networks,”** National Digital Archive Workshop, Taipei, Taiwan, May 2009.
  - **“Emerging Network Science,”** National Digital Archive Workshop, Taipei, Taiwan, November 2009.
  
- **Panelist:**

- **“Evolution of Big Data Technology: where are we today in terms of security, privacy, analytics and usability? Do data security, ease of use and analytics helpful or obstacle to patient care?”** *The Forum for Medical Affairs, American Medical Association Interim meeting, Atlanta, GA, Nov. 2015.*
- **“Markovian Information Propagation Behavior Modeling in Dynamic Probabilistic Social Networks,”** *19<sup>th</sup> Behavior Representation in Modeling & Simulation Conference , Charleston, SC, March 2010.*
- **“Value and Culture Variety of Social Networks,”** *ACM Workshop on Connected Media, December 2010.*
- **“Social Media,”** *National Science Foundation, 2010.*
  
- **Conference Tutorial Lecturer:**
  - **“The World is Big and Linked: whole spectrum industry solutions toward Big Graphs ,”** *IEEE Intl. Conf. on Big Data, Santa Clara, CA, October 2015.*
  - **“Multimedia Security Technologies for Digital Rights Management,”** *IEEE Intl. Conf. on Multimedia & Expo (ICME), Beijing, China, July 2007,*
  - **“Emerging Multimedia Understanding Technologies,”** *IEEE Intl. Workshop on Multimedia Signal Processing, Shanghai, China, Oct 2005.*
  - **“Emerging Video Understanding Technologies and Applications,”** *IEEE Intl. Symposium on Circuits & Systems (ISCAS), Kobe, Japan, May 2005.*
  - **“Emerging Multimedia Security Technologies for Digital Rights Management,”** *IEEE Intl. Conf. on Consumer Electronics (ICCE), Las Vegas, Jan. 2005.*
  - **“Multimedia Security Technologies for Digital Rights Management,”** *IEEE Global Communication Conference (Globecom), San Francisco, Dec 2003.*
  - **“Multimedia Security Technologies for Digital Rights Management,”** *IEEE Intl. Conf. on Multimedia & Expo (ICME), Baltimore, July 2003.*
  - **“Lossless Data Hiding,”** *IEEE Intl. Symposium on Circuits & Systems (ISCAS), Bangkok, May 2003.*
  
- **Conference Special Session Organizer:**
  - **“Content Understanding and Transcoding Techniques for Media Adaptation,”** *IEEE Intl. Conf. on Multimedia & Expo (ICME), Taipei, June 2004;*
  - **“The Role of Machine Learning in Extracting Semantics from Multimedia Content,”** *IEEE Intl. Conf. on Image Processing (ICIP), Barcelona, September 2003;*
  - **“Emerging Multimedia Security Technologies for Digital Rights Management,”** *IEEE Intl. Conf. on Multimedia & Expo (ICME), Taipei, June 2004;*
  - **“Media Security Issues in Streaming and Mobile Applications,”** *IEEE Intl. Conf. on Image Processing (ICIP), Singapore, October 2004;*



- **“Multimedia Security and Watermarking Applications,”** *IEEE Intl. Conf. on Information Technology: Coding and Computing (ITCC)*, Las Vegas, April 2001.
  
- **Academic Interactions:**
  - **“111 Project” Advisory Board** – *Shanghai Jiaotong University, 2007-2009 and 2011-2012.*
  - **Visiting Associate Professor** – *Dept. of Computer Science, National Taiwan University, November 2006.*
  - **Visiting Associate Professor** – *Dept. of Computer Science, National Taiwan University, December 2005.*
  - **International Advisory Board** – *Dept. of Electrical Engineering, National Cheng-Kung University, Tainan, Taiwan, 2004 –2006.*
  - **Course/ Short Lecture,**
    - *(Course 3pt) “Big Data Analytics,”* Dept. of Electrical Engineering, Columbia University, Fall 2014.
      - Introduction of Big Data Analytics
      - Processing Algorithms:
        - \* MapReduce and Parallel Processing
        - \* Big Data Machine Learning Algorithms
        - \* Graph and Linked Data Processing
        - \* Run-Time Platforms
      - Storage and Retrieval:
        - \* Distributed Storage, Hadoop Distributed File System (HDFS), and HBase
        - \* Data Read/Write/Search/Retrieve on Hard Disks, SSDs, and Memory
        - \* Query Languages and Tools for Big Data
      - Visualization:
        - \* Visual Exploration and Data Mining
        - \* Real-Time and Dynamic Big Data Visualization
      - Middleware:
        - \* Homogeneous Multicore Processors
        - \* Heterogeneous Multicore Processors: CPU-GPU and FPGA
        - \* High Performance Computing Platforms
    - *(Course 3pt) “Complex Social & Cognitive Analytics,”* Dept. of Computer Science & Engineering, NYU, Spring 2014.
      - Overview of Large-Scale Social Media Analytics
      - Social Graph Analysis
      - Human Cognitive Traits and Personality Analysis
      - Text and Image Sentiment Analysis
      - Behavioral Modeling and Personalized Marketing
      - Graphical Models and Large-Scale Bayesian Networks
      - Cognitive Security
      - Live Monitoring, Forensic Analytics, and Predictive System
      - Audio-Visual Cognitive and Perception Analysis
      - Brain Signal Analysis and Brain Computer Interface
      - Global Privacy Laws and Privacy Policies
      - Privacy-Preserving Encrypted-Domain Data Mining
    - *(Course 3pt) “Network Science,”* Dept. of Electrical Engineering, Columbia University, Fall 2010-2013.

- Overview of Network Science
- Network Representations and Characteristics
- Network Partitioning and Visualization
- Network Analysis Use Case
- Network Sampling, Estimation, and Model
- Network Topology Inference
- Network Info Flow
- Dynamic & Probabilistic Network
- Graph Database
- Knowledge Graphs
- Impact of Network Analysis
- Large-Scale Network Analysis System
- *(Course 3pt) "Multimedia Security Systems,"* Dept. of Electrical Engineering, Columbia University, Spring 2005, Summer 2005, Spring 2006, Summer 2007.
  - Overview
  - Multimedia Compression
  - Multimedia Encryption
  - Digital Watermarking
  - Security Attacks
  - Multimedia Authentication
  - Multimedia Forensics
  - Biometric Features I: Pattern, Speaker and Behavior Recognition
  - Biometric Features II: Speaker Recognition
  - Biometric Features III: Face Recognition
  - Sensor Network
  - Voice over IP Security
  - Key Managements
- *(Lecture 12 hrs) "Multimodality Signal Understanding and Computational social science,"* Dept. of Computer Science, National Taiwan University, December 2005.
- *(Lecture 8 hrs) "Multimedia Understanding and Multimedia Security,"* Dept. of Computer Science, National Tsinghua University, Nov. 2003.
- *(Lecture 3 hrs) "Statistical Methods for Video Indexing and Analysis",* Dept. of Electrical Engineering, Columbia University, Oct. 2003.
- *(Lecture 6 hrs) "Multimedia Security in Visual Information Systems",* Dept. of Electrical Engineering, Columbia University, Nov. 2001 & Nov. 2002.
- **IBM Research Student Fellowship Committee** – IBM Research, 2004.
- **IBM Research External Multimedia Seminar Co-Organizer** – IBM Research, 2004 - 2005.
- **Memberships, Technical Committee Memberships, and Reviewers:**
  - *IEEE (Fellow '12 -, Senior Member '04 - '11, Member '96-'97, '01-'03, Student Member '98-'00)*
  - *Academy of Management ('11 - )*
  - *IEEE Signal Processing Society Information Forensics and Security Technical Committee ('11 - ),*
  - *ACM Member ('01 - '06, Student Member '98 – '00 ),*
  - *IEEE Communication Society Multimedia Technical Committee ('02-),*

- *IEEE Circuits and Systems Society Visual Signal Processing Technical Committee ('03-),*
- *IEEE Circuits and Systems Society Multimedia System and Application Technical Committee ('03-),*
- *IEEE Signal Processing Society Multimedia Signal Processing Technical Committee ('06-'09),*
- *ACM SIG Multimedia ('01-'06),*
- *ACM SIG Knowledge Discovery and Data mining ('05- '06),*
- *American Association for the Advancement of Science (AAAS) ('05 )*
- *International Network for Social Network Analysis (INSNA) ('05 - '10 )*
- **Journal/Magazine/Book Reviewer:** *More than 40 international journals, magazines, and books, including IEEE Trans. on Multimedia, IEEE Trans. on Image Processing, IEEE Trans. on Circuits and Systems for Video Technology, IEEE Trans. on Signal Processing, IEEE Trans. on Signal Processing Letters, IEEE Multimedia Magazine, IEEE Signal Processing Magazine, IEEE Communications Magazine, ACM Multimedia System Journal, SPIE Journal of Visual Communication and Image Representation.... (not a complete list)*
- **Invited Talks:** *More than 30 invited seminar talks, including Columbia University, Univ. of Washington, Univ. of Michigan, New Jersey Institute of Technology, Stevens Institute of Technology, NEC Research, Panasonic Research, Sony Research, Microsoft Research, National University of Singapore, Institute of Information Research, Sinica Academics, Taiwan University, Tsinghua University, Taiwan Normal University, Chiao-Tung University, Cheng-Kung University.... (not a complete list)*

## Student Advisees

- **Ph.D. Thesis Co-Advisor:**

- **Dr. Xiaodan Song**, *Dept. of Electrical Engineering, Univ. of Washington.* Thesis Title: Exploring Dynamic Patterns for Recommendation. [graduated -- August 2006, currently in Google Labs, Mt. View, CA.]
- **Dr. Ya-Ti Peng**, *Dept. of Electrical Engineering, Univ. of Washington.* Thesis Title: Multimodal Signal Processing for Healthcare Application. [graduated 2008, currently in Intel Labs, Santa Clara, CA.]
- **Dr. Jyh-Ren Shieh**, *Dept. of Computer Science, National Taiwan Univ.* Thesis Title: Multipartite Networks and Encrypted-Domain Data Mining for Search and Recommendation. [graduated 2012, currently in DoD, Taiwan]

- **Ph.D. Thesis Mentor:**

- **Dr. Lynn Wu**, *Solan Management School, MIT.* Thesis Title: Essays on Social Networks and Information Worker Productivity. [2008 – 2011, graduated 2011, currently in The Wharton School, University of Pennsylvania, with the Operations and Information Management Department]

- **Ph.D. Thesis Committee:**

- **Dr. Brendan Jou**, Dept. of Electrical Engineering, Columbia University,
- **Dr. Guangnan Ye**, Dept. of Electrical Engineering, Columbia University,
- **Dr. Jessie Hsu**, Dept. of Electrical Engineering, Columbia University,
- **Dr. Mandis Beigi**, Dept. of Electrical Engineering, Columbia University
- **Xiaodan Yan**, Dept. of Cognitive Science, Rensselaer Polytech Institute

- **Advising Interns at IBM Watson Research Center (only direct advisees are listed):**

- **Dr. Helena Buhr**, Northwestern University Kellogg Management, May ~ Aug 210. Project Title: Evolution of Social Networks.
- **Dr. U Kang**, School of Machine Learning, Carnegie Mellon University, May ~ Aug 210. Project Title: Large-Scale and Real-Time Network Analysis. (now Assistant Professor, KAIST, Daejeon, Korea)
- **Dr. David Hsu**, Dept. of Computer Science, University of Minnesota, Jun ~ Aug 210. Project Title: Classification and Clustering utilizing Super Computer. (now Assistant Professor, Natl. Cheng-Chi Univ, Taipei, Taiwan).
- **Dr. Navneet Panda**, Dept. of Electrical and Computer Engineering, Univ. of California, Santa Barbara, June ~ Sept 2005. Project Title: Speeding Up Support Vector Machine Classification. (now with Google.)
- **Dr. Gang Wu**, Dept. of Electrical and Computer Engineering, Univ. of California, Santa Barbara, June ~ Sept. 2004. Project Title: Machine Learning from Imperfect Labeling. (now with Twitter)
- **Dr. Dongqing Zhang**, Dept. of Electrical Engineering, Columbia University, May ~ Aug 2003. Project Title: Multi-channel Multimedia Semantic Correlation in the Concept Space. (now with Huawei)
- **Vida Ha**, Dept. of Electrical Engineering and Computer Science, MIT, May ~ Aug 2001. Project Title: Pervasive Video Streaming Clients on Palm PDA Devices.

- **Advising Visiting Postdocs and Ph.D. students at IBM Watson Research Center:**

- **Dr. Yingzi Jin**, University of Tokyo, May 2009 ~ April 2010. Project Title: Financial Impact of Company Networks.
- **Dr. Yusuke Matsumura**, Hokkaido University, Sept 2009 ~ March 2011. Project Title: Network Optimization
- **Dr. Fuyuko Ito Matsumura**, Doshisha University, May 2010 ~ March 2011. Project Title: Evolutionary User Modeling

- **Hao Zhou**, Department of Psychology, Renmin University, Oct 2012-August 2013. Project Title: Positive Psychology of Internet
- **Dr. Larry Lai**, National Taiwan University, September 2013-May 2014. Project Title: Brain Neural Network Analysis.

## Granted Recent Research Project Proposals

- **Social Media in Strategic Communications (PI)**, DARPA, February 2012 – February 2015.
- **Anomaly Detection at Multiple Scales (PI)**, DARPA, June 2011 – June 2015.
- **Value of Networks (PI)**, Social and Cognitive Network Science Academic Research Center, Oct 2009 – Sept. 2019.
- **Smarter Campus (PI)**, IBM Software Strategy, 2011.
- **Social selling & marketing for B2B (PI)**, IBM Software Industry Solution, 2011.
- **Social Network Analytics for Cyber Security (PI)**, Cyber Security Research Center, 2011 - present.
- **Expertise Search and Social Network Analysis (PI)**, IBM, June 2006 – present.
- **Multimodality Sensor Signal Understanding on Human Activities (Co-PI)**, Institute of Information Industry (granted to the Univ. of Washington), Jan. 2006 – Dec. 2008.
- **Multimodality Sensor Fusion for Health Care Applications (Co-PI)**, Institute of Information Industry (granted to the Univ. of Washington), June 2005 – Dec. 2005.
- **Building Evolutionary Graphical Models for Expertise and Community Mining (PI)**, NEC Labs America (granted to the Univ. of Washington), Sept. 2004 – May 2006.
- **Reconstructing and Mining Semantic Threads across Multiple Video News Sources over Space and Time (Co-PI)**, Intelligence Community -- Advanced Research and Development Activity (ARDA), IARPA, June. 2004 – June. 2006.
- **Pervasive Transcoding Middleware for Geospatial Intelligence Access**, Defense Information System Agency (DISA), Jan. 2003 – Feb. 2004.
- **Multimedia Semantic Mining**, IBM Adventure Research Fund, Aug. 2001 – Oct. 2004.

## **Selected Publications (10,000+ citations in Google Scholar; 4,000+ citations of first-author papers)**

**[2016]:**

### ***Journal Paper***

1. N Cao, C Shi, S Lin, J Lu, YR Lin, and C.-Y. Lin, “**TargetVue: Visual Analysis of Anomalous User Behaviors in Online Communication Systems**,” IEEE Trans. on Visualization and Computer Graphics, Vol. 22, pp. 280-289, 2016.
2. Rose Yu, Huida Qiu, Zhen Wen, Ching-Yung Lin, and Yan Liu, “**A Survey on Social Media Anomaly Detection**,” ACM SIGKDD Explorations Newsletter, Vo. 18, pp. 1-14. 2016.
3. Anni Coden, Wan-Yi Lin, Keith Houck, Michael Taneblatt, Jeff Boston, Julie MacNaught, Danny Soroker, Justin Weisz, Shimei Pan, Jui-Hsin Lai, Jie Lu, Steve Wood, Yinglong Xia, and Ching-Yung Lin. “**Uncovering Insider Threats from the Digital Footprints of Individuals**,” IBM Journal of Research and Development, Vo. 60, Issue 4. pp. 8:1 - 8:11, 2016.

### ***Conference Papers***

4. CFR Chen, GGC Lee, V Sritapan, and C.-Y. Lin, “**Deep Convolutional Neural Network on iOS Mobile Devices**,” IEEE Intl. Workshop on Signal Processing Systems (SiPS), Dallas, October 2016.
5. JHL Lai, RC Yu, and C.-Y. Lin, “**Neuron Activity Extraction and Network Analysis on Mouse Brain Videos**,” IEEE Intl. Symposium on Multimedia (ISM), San Jose, December 2016.
6. D Lubensky, M Pistoia, C.-Y. Lin, and O Tripp. “**Cognitive Mobile Security: invited conference keynote**”, Prof. of the Intl. Conf. on Mobile Software Engineering and Systems, Austin, May 2016.

**[2015]:**

### ***Conference Papers***

7. CFR Chen, GGC Lee, Y Xia, WS Lin, T Suzumura, and C.-Y. Lin, “**Efficient Multi-training Framework of Image Deep Learning on GPU Cluster**,” IEEE Intl. Symposium on Multimedia (ISM), Miami, December 2015.
8. JHL Lai, CC Lin, CFR Chen, and C.-Y. Lin, “**Multi-Modality Mobile Image Recognition Based on Thermal and Visual Cameras**,” IEEE Intl. Symposium on Multimedia (ISM), Miami, December 2015.
9. CH Huang, GGC Lee, CFR Chen, YL Xia and C.-Y. Lin, “**Reconfigurable Filter Bank Design via Principal Component Analysis and Low Rank Approximation**,” IEEE Global Conf. on Signal and Information Processing (GlobalSiP), Orlando, December 2016.
10. L Nai, Y Xia, I Tanase, H Kim, and C.-Y. Lin, “**GraphBIG: Understanding Graph Computing in the Context of Industrial Solutions**,” Supercomputing Conference, November 2015.
11. N Cao, C Shi, S Lin, J Lu, Y-R Lin, and C.-Y. Lin, “**TargetVue: Visual Analysis of Anomaly User Behaviors in Online Communication Systems**,” IEEE Intl. Conf. on Visual Analytics Science and Technology, October 2015.

12. C.-Y. Lin, D Yeh, N Cao, JH Lai, CF Chen, C Shi, J Lu, J Crawford, K Houck, Y Xia, S Lin, R Hull, F Heath, P Sukaviriya, and S Goh, "**IBM System G Social Media Solution: analyze content, people, and network dynamics in context,**" IEEE Intl. Conf. on Multimedia & Expo, June 2015.

**[2014]:**

### **Conference Papers**

13. J Koven, H Siadati, and C.-Y. Lin, "**Finding Valuable Yelp Comments by Personality, Content, Geo, and Anomaly Analysis,**" IEEE Intl. Conf. on Data Mining, December 2014
14. R Yu, S Yang, G Li, C Qian, S Sahu, and C.-Y. Lin, "**Mobile App Connecting People Based on Personality Detection and Image Perception Analysis,**" IEEE Intl. Symposium on Multimedia, December 2014.
15. J G Ellis, W S Lin, C.-Y. Lin, and S F Chang, "**Predicting Evoked Emotions in Video,**" IEEE Intl. Symposium on Multimedia, December 2014.
16. Yinglong Xia, Ilie G. Tanase, Lifeng Nai, Wei Tan, Yanbin G. Liu, Jason Crawford, and C-Y. Lin, "**Explore Efficient Data Organization for Large Scale Graph Analytics and Storage,** IEEE BigData'14, 2014
17. Yinglong Xia, Larry Lai, Lifeng Nai, and Ching-Yung Lin, "**Concurrent Image Query using Local Random Walk with Restart on Large Scale Graphs,**" IEEE Intl. Workshop on Multimedia Big Data Computing, July 2014.
18. Ilie Tanase, Yinglong Xia, Lifeng Nai, Yanbin Liu, Wei Tan, Jason Crawford, and Ching-Yung Lin, "**A Highly Efficient Runtime and Graph Library for Large-Scale Graph Analytics,**" ACM Intl. Workshop on Graph Data-Management Experiences & Systems, in conjunction with ACM SIGMOD/PODS, June 2014.
19. Lifeng Nai, Yinglong Xia, Ching-Yung Lin, Bo hong, and Hsien-Hsin Lee, "**Cache-Conscious Graph Collaborative Filtering on Multisocket Multicore Systems,**" *ACM Intl. Conf. on Computing-Frontiers*, Cagliari, Italy, May 2014.

### **Journal/Magazine Papers**

20. Kirstin Gillon, Sinan Aral, Ching-Yung Lin, Sunil Mithas, and Mark Zozulia, "**Business Analytics: Radical Shift or Incremental Change?**" *Communications of the Association of Information Systems*, January 2014..

**[2013]:**

### **Conference Papers**

21. Yale Song, Zhen Wen, Ching-Yung Lin, and Randall Davis, "**One-Class Conditional Random Fields for Sequential Anomaly Detection,**" *Intl. Joint Conf. on Artificial Intelligence (IJCAI)*, Beijing, China, 2013.
22. Zhen Wen and Ching-Yung Lin, "**Exploiting Synchronicity Networks for Finding Valuables in Heterogeneous Network,**" *SIAM Data Mining* 2013..

### **Journal/Magazine Papers**

23. Jyh-Ren Shieh, Ching-Yung Lin, Sun-Xian Wang, and Ja-Ling Wu, "Relational Term Suggestion Graphs incorporating Multipartite Concept and Expertise Networks," *ACM Trans. On Intelligent Systems and Technology (TIST)* 5(1), 19, 2013.
24. Prithwish Basu, Richard J. Gibbens, Thomas F. LaPorta, Ching-Yung Lin, Ananthram Swami, Eiko Yoneki, "**Network Science**," *IEEE Journal on Selected Areas in Communications* 31(6),: 993-996, 2013.

### **[2012]:**

#### **Conference Papers**

25. Jiang Yang, Lada Adamic, Michael Ackerman, Zhen Wen and Ching-Yung Lin, "**The Way I Talk to You: sentiment expression in an organizational context**," *Intl. Conf. on Computer-Human Interaction (HCI), Austin, TX, May 2012*.
26. Zhen Wen, Mercan Topkara, Liangliang Cao, Ching-Yung Lin and Jennifer Lai, "**How Multimedia in Enterprise Social Networks Matters to People's Performance**," *IEEE Workshop on Social Multimedia Computing, Melbourne, July 2012*.

### **Journal/Magazine Papers**

27. Ching-Yung Lin, Lynn, Wu, Zhen Wen, Hanghang Tong, Vicky Griffiths-Fisher, and David Lubensky, "**Social Network Analysis in Enterprise**," *Proceedings of the IEEE*, September 2012.
28. Hanghang Tong and Ching-Yung Lin, "**Non-Negative Residual Matrix Factorization: problem definition, fast solutions, and applications**," *Journal of Statistical Analysis and Data Mining*, December 2012.
29. Yingzi Jin, Ching-Yung Lin, Yutaka Matsuo, Mitsuru ishizuka, "**Mining Dynamic Social Networks from Public News Articles for Company Value Prediction**," *Journal of Social Network Analysis Mining*, March 2012.
30. U Kang, Hanghang Tong, Jimeng Sun, Ching-Yung Lin, and Christos Faloutsos, "Gbase: an Efficient Analysis Platform for Large Graphs." *Very Large Database (VLDB) Journal*, October 2012.
31. Jyh-Ren Shieh, Ching-Yung Lin, Shun-Xuan Wang, and Ja-Ling Wu, "**Relational Term-Suggestion Graphs Incorporating Multi-Partite Concept and Expertise Networks**," *ACM Trans. On Intelligent Systems and Technology*, 2012/3.

### **[2011]:**

#### **Conference Papers**

32. Jiang Yang, Zhen Wen, Lada Adamic, Michael Ackerman, and Ching-Yung Lin, "**Collaborating Globally: Culture and Organizational Computer-Mediated Communications**," *Intl. Conf. on Information Systems (ICIS)*, Shanghai, December 2011. (Best Theme Paper Award)



33. Jyh-Ren Shieh, Ching-Yung Lin, and Ja-Ling Wu, "**Recommendation in the End-to-End Encrypted Domain**," *ACM Conf. on Information and Knowledge Management (CIKM)*, Glasgow, October 2011.
34. Zhen Wen and Ching-Yung Lin, "**Improving User Interest Inference from Social Neighbors**," *ACM Conf. On Information and Knowledge Management (CIKM)*, Glasgow, October 2011.
35. U Kang, Hanghang Tong, Jimeng Sun, Ching-Yung Lin, and Chirstos Faloutsos, "**GBASE: Scalable and General Graph Management System**," *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, San Diego, August 2011.
36. Hanghang Tong, Jingrui He, Zhen Wen, and Ching-Yung Lin, "**Diversified Ranking on Large Graphs: An Optimization Viewpoint**," *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, San Diego, August 2011.
37. Fei Wang, Hanghang Tong and Ching-Yung Lin, "**Towards Evolutionary Nonnegative Matrix Factorization**," *AAAI Conference on Artificial Intelligence (AAAI)*, San Francisco, August 2011.
38. Yingzi Jin, Ching-Yung Lin, Yutaka Matsuo, and Mitsuru Ishizuka, "Mining Longitudinal Network for Predicting Company Value," *Intl. Joint Conf. on Artificial Intelligence (IJCAI)*, Barcelona, July 2011.
39. Hanghang Tong and Ching-Yung Lin, "**Non-Negative Residual Matrix Factorization with Application to Graph Anomaly Detection**," *SIAM Data Mining Conference (SDM)*, Mesa, AZ, April 2011.
40. Dashun Wang, Zhen Wen, Hanghang Tong, Ching-Yung Lin, Chaoming Song, and Albert-Laszlo Barabasi, "**Information Spreading in Context**," *the 20<sup>th</sup> Intl. WWW Conf.*, Hayderabad, India, March 2011.
41. Chang Yan Chi, Qinying Liao, Yingxin Pan, Shiwan Zhao, Tara Matthews, Thomas P. Moran, Michelle X. Zhou, David Millen, Ching-Yung Lin, and Ido Guy, "Smarter Social Collaboration at IBM Research," *ACM Conf. on Computer Supported Cooperative Work (CSCW)*, Hangzhou, China, March 2011.

### **Journal/Magazine Papers**

42. Hanghang Tong and Ching-Yung Lin, "**Non-Negative Residual Matrix Factorization with Application to Graph Anomaly Detection**," *Special Issue on the Best Papers of SDM '11*, Wiley, October 2011.
43. Ja-Hwung Su, Chien-Li Chou, Ching-Yung Lin and Vincent Tseng. "**Effective Semantic Annotation by Image-Concept Distribution Model**," *IEEE Trans. on Multimedia*, Vo. 13, No. 3, June 2011.
44. Jyh-Ren Shieh, Ching-Yung Lin, Shun-Xuan Wang, and Ja-Ling Wu, "**Building Multi-Modal Relational Graphs for Multimedia Retrieval**," *Intl. Journal of Multimedia Data Engineering and Management*, Vo. 2, No. 2, April-June 2011.

**[2010]:**

### **Conference Papers**

45. Jyh-Ren Shieh, Ching-Yung Lin, Shun-Xuan Wang, Yung-Huan Hsieh, and Ja-Ling Wu, "**Incorporating Multi-Partite Networks and Expertise to Construct Related-Term Graph,**" IEEE Intl. Workshop on Semantic Aspects in Data Mining, Sydney, Australia, December 2010.
46. Zhen Wen , Dashun Wang and Ching-Yung Lin, "**Unlock Collective Intelligence from Information Flows in Social Networks,**" *Network Science Workshop*, West Point, NY, October 2010.
47. Zhen Wen and Ching-Yung Lin, "**On the Quality of Inferring Interests from Social Neighbors,**" *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining*, Washington DC, July 2010.
48. Ja-Hwung Su, Chien-Li Chou, Ching-Yung Lin and Vincent S. Tseng, "**Effective Image Semantic Annotation by Discovering Visual-Concept Associations from Image-Concept Distribution Model,**" *IEEE Intl. Conf. on Multimedia and Expo*, Singapore, July 2010.
49. Zhen Wen and Ching-Yung Lin, "**Towards Finding Valuable Topics,**" *SIAM Intl. Conf. on Data Mining (SDM)*, Columbus, OH, April 2010.
50. Zhen Wen and Ching-Yung Lin, "**How Accurately Can One's Interests be Inferred from Friends**" *the 19<sup>th</sup> Intl. WWW Conf.*, Raleigh, NC, April 2010.

**[2009]:**

### **Conference Papers**

51. Zhen Wen and Ching-Yung Lin, "**Using Social Networks, Content and Revenue Analysis to Find Valuable Topics in Enterprise,**" *Workshop on Information in Networks*, New York, NY, Sept 2009.
52. Ya-Ti Peng, Ching-Ying Lin, Ming-Ting Sun, and Kun-Cheng Tsai, "**Healthcare Audio Event Classification Using Hidden Markov Models,**" *IEEE Intl. Conf. on Multimedia and Expo*, New York, NY, June 2009.
53. Jimeng Sun, Spiros Papadimitriou, Ching-Yung Lin, Nan Cao, Shixia Liu, Weihong Qian, "**MultiVis: Content-Based Social Network Exploration through Multi-way Visual Analysis,**" *SIAM Intl. Conf. on Data Mining (SDM)*, Sparks, NV, April 2009.
54. Jyh-Ren Shieh, Yung-Huan Hsieh, Yang-Ting Yeh, Tse-Chung Su, Ching-Yung Lin, Ja-Ling Wu, "**Building term suggestion relational graphs from collective intelligence,**" *the 18<sup>th</sup> Intl. WWW Conf.*, Madrid, Spain, April 2009.
55. Lei Shi, Nan Cao, Shixia Liu, Weihong Qian, Li Tan, Guodong Wang, Jimeng Sun and Ching-Yung Lin, "**HiMap: Adaptive Visualization of Large-Scale Online Social Networks**", IEEE Pacific Visualization Symposium, Beijing, China, April 2009.
56. Ching-Yung Lin, Nan Cao, Shixia Liu, Spiros Papadimitriou, Jimeng Sun, Xifeng Yan, "**SmallBlue: Social Network Analysis for Expertise Search and Collective Intelligence,**" *IEEE Intl. Conference on Data Engineering (ICDE)*. Shanghai China, March 2009.
57. Lynn Wu, Ching-Yung Lin, Sinan Aral, Erik Brynjolfsson "**Value of Social Network -- A Large-Scale Analysis on Network Structure Impact to Financial Revenues of Information Technology Consultants,**" *Winter Information Systems Conference*, Salt Lake City, UT, Feb. 2009.

### **Journal/Magazine Papers**

58. Lexing Xie, Hari Sundaram, and Ching-Yung Lin “**Special Section on Communities and Media Computing**,” *IEEE Trans. on Multimedia*, Vol. 11N, No. 3, April 2009..

**[2008]:**

### **Journal/Magazine Papers**

59. Ching-Yung Lin, Kate Ehrlich, Vicky Griffiths-Fisher, and Christopher Desforges “**SmallBlue: People Mining for Expertise Search**,” *IEEE Multimedia Magazine*, Jan.-Mar. 2008.

### **Conference Papers**

60. Ya-Ti Peng, Ching-Yung Lin and Ming-Ting Sun, “**Data Scaling Classification in Stream Analysis Systems**,” *IEEE Intl. Conf. on Multimedia and Expo*, Hannover, Germany, June 2008.
61. Jyh-Ren Shieh, Yang-Ting Yeh, Chih-Hung Lin, Ching-Yung Lin and Ja-Ling Wu, “**Using Semantic Graphs for Image Search**,” *IEEE Intl. Conf. on Multimedia and Expo*, Hannover, Germany, June 2008.
62. Ya-Ti Peng, Ching-Yung Lin and Ming-Ting Sun, “**Audio Event Classification Using Binary Hierarchical Classifiers with Feature Selection for Healthcare Applications**,” *IEEE Intl. Symp. on Circuits and Systems*, Seattle, WA, May 2008.
63. Jyh-Ren Shieh, Yang-Ting Yeh, Chih-Hung Lin, Ching-Yung Lin and Ja-Ling Wu, “**Collaborative Knowledge Semantic Graph Image Search**,” the 17<sup>th</sup> Intl. *WWW Conf.*, Beijing, China, April 2008.

**[2007]:**

### **Journal/Magazine Papers**

64. Ya-Ti Peng, Ching-Yung Lin, Ming-Ting Sun and Carol Landis, “**Multimodality Sensor System for Long-Term Sleep Quality Monitoring**,” *IEEE Trans. on Biomedical Circuits and System*, 2008.
65. Deepa Kundur, Ching-Yung Lin, and Chun-Shien Lu, “**Visual Sensor Networks**,” *EURASIP Journal on Advances in Signal Processing*, 2007.

### **Conference Papers**

66. Kate Ehrlich, Ching-Yung Lin and Vicky Griffiths-Fisher, “**Searching for experts in the enterprise: Combining text and social network analysis**,” *ACM Group Conference*, Sanibel Island, FL, November 2007.
67. Ching-Yung Lin, “**Information Flow Prediction by Modeling Dynamic Probabilistic Social Network**,” *Intl. Conf. on Network Science*, New York City, NY, May 2007.

68. Ching-Yung Lin, Kate Ehrlich and Vicky Griffiths-Fisher, "**Small Blue: Making Big Blue a Small World with social sensors, expertise search and social network analysis,**" *Sunbelt 27th Intl. Social Network Conf.*, Corfu Island, Greece, May 2007.

## **[2006]:**

### **Book**

69. Wenjun Zheng , Heather Yu and Ching-Yung Lin, "**Multimedia Security Technologies for Digital Rights Management,**" *Elsevier*, June 2006.

### **Conference Papers**

70. Xiaohui Gu, Zhen Wen, Ching-Yung Lin and Philip S Yu, "**ViCo: An Adaptive Distributed Video Correlation System,**" *ACM Multimedia Conference*, Santa Barbara, CA, October 2006.
71. Xiaodan Song, Belle L. Tseng, Ching-Yung Lin and Ming-Ting Sun, "**Personalized Recommendation Driven by Information Flow,**" *ACM SIGIR Conference*, Seattle, WA, August 2006.
72. Victor Sutan, Jason Cardillo and Ching-Yung Lin, "**Developing Smart Video Semantic Sensors,**" *IEEE Intl. Symposium on Circuits and Systems*, Kos Island, Greece, May 2006.
73. Ya-Ti Peng, Ching-Yung Lin, Ming-Ting Sun and Ming-Whei Feng, "**Sleep Condition Inferencing Using Simple Multimodality Sensors,**" *IEEE Intl. Symposium on Circuits and Systems*, Kos Island, Greece, May 2006.
74. Xiaodan Song, Ching-Yung Lin, Belle L. Tseng and Ming-Ting Sun, "**Modeling Evolutionary and Relational Behaviors for Community-based Dynamic Recommendation,**" *SIAM Data Mining Conference*, Bethesda, MD, April 2006.
75. Ching-Yung Lin, Xiaodan Song, Ming-Ting Sun and Belle L. Tseng, "**Automatic Modeling of Social Networks through Content Analysis of Communications,**" *Sunbelt 26th Intl. Social Network Conf.*, Vancouver, Canada, April 2006.
76. Ya-Ti Peng, Ching-Yung Lin and Ming-Ting Sun, "**Multimodality Sensors for Sleep Quality Monitoring and Logging,**" *1st IEEE Workshop on Electronic Chronicles*, Atlanta, GA, April 2006.
77. Ya-Ti Peng, Ching-Yung Lin and Ming-Ting Sun, "**A Distributed Multimodality Sensor System for Home-Used Sleep Condition Inference and Monitoring,**" *IEEE/AMA/BMES Transdisciplinary Conference on Distributed Diagnose and Home Healthcare*, Arlington, VA, April 2006.

### **Book Chapters**

78. Tian-Tsong Ng, Shih-Fu Chang, Ching-Yung Lin and Qibin Sun, "**Passive-Blind Image Forensics**" in *Multimedia Security Technologies for Digital Rights Management*, Elsevier , April 2006.

## **[2005]:**

## **Conference Papers**

79. Xiaodan Song, Ching-Yung Lin and Ming-Ting Sun, "**Multimodality Concept Detectors on News Video**," *Proc. of NIST Workshop on Text Retrieval Conf. (TRECVID)*, Gaithersburg, MD, November 2005.
80. Xiaodan Song, Ching-Yung Lin, Belle L. Tseng and Ming-Ting Sun, "**Modeling and Predicting Personal Information Dissemination Behavior**," *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining*, Chicago, August 2005. (**KDD 2005 Student Travel Award**)
81. Ching-Yung Lin, Olivier Verscheure and Lisa Amini, "**Semantic Routing and Filtering for Large-Scale Video Streams Monitoring**," *IEEE Intl. Conf. on Multimedia & Expo*, Amsterdam, Netherlands, July 2005.
82. Xiaodan Song, Ching-Yung Lin and Ming-Ting Sun, "**Speech-based Video Retrieval Using WordNet**," *IEEE Intl. Conf. on Multimedia & Expo*, Amsterdam, Netherlands, July 2005.
83. Xiaodan Song, Belle L. Tseng, Ching-Yung Lin and Ming-Ting Sun, "**ExpertiseNet: Relational and Evolutionary Expert Modeling**," *Intl. Conf. on User Modeling*, Edinburgh, UK, July 2005. (**US National Science Foundation UM05 Student Travel Award**)
84. Ching-Yung Lin and Belle L. Tseng, "**Optimizing User Expectations for Video Semantic Filtering and Abstraction**," *IEEE Intl. Symposium on Circuits and Systems*, Kobe, Japan, May 2005.
85. Xiaodan Song, Ching-Yung Lin and Ming-Ting Sun, "**Autonomous Learning of Visual Concept Models**," *IEEE Intl. Symposium on Circuits and Systems*, Kobe, Japan, May 2005.
86. Lexing Xie, L. Kennedy, Shih-Fu Chang, Ajay Divakaran, Huifan Sun and Ching-Yung Lin, "**Layered Dynamic Mixture Model for Pattern Discovery in Asynchronous Multi-Modal Streams**," *IEEE Intl. Conf. on Acoustics, Speech, and Signal Processing*, Philadelphia, PA, March 2005. (**Special Outstanding Paper Recommendation**)
87. Ching-Yung Lin, Xiaodan Song and Gang Wu, "**Imperfect Learning for Autonomous Concept Modeling**," *SPIE EI 2005 – Storage and Retrieval for Media Databases*, San Jose, January 2005.

## **Journal/Magazine Papers**

88. Qibin Sun, Shuiming Ye, Ching-Yung Lin and Shih-Fu Chang, "**A Crypto Signature Scheme for Image Authentication over Wireless Channel**," *Intl. Journal of Image and Graphics*, January 2005.

**[2004]:**

## **Conference Papers**

89. A. Amir, J. Argillander, M. Berg, S.-F. Chang, W. Hsu, G. Iyengar, J. Kender, Ching-Yung Lin, M. Naphade, A. Natsev, J. R. Smith, J. Tesic, G. Wu, R. Yan and D. Zhang, "**IBM Research TRECVID-2004 Video Retrieval System**," *Proc. NIST Text Retrieval Conf. Video (TRECVID)*, Gaithersburg, MD, November, 2004.

90. Yi Wu, Ching-Yung Lin, Edward Chang, and John R. Smith, "**Multimodal Kernel Fusion for News Video Concept Detection**," *IEEE Intl. Conf. on Image Processing*, Singapore, October 2004.
91. Lexing Xie, L. Kennedy, Shih-Fu Chang, Ajay Divakaran, Huifan Sun and Ching-Yung Lin, "**Discovering Meaningful Multimedia Patterns with Audio-Visual Concepts and Associated Text**," *IEEE Intl. Conf. on Image Processing*, Singapore, October 2004. (**Student Paper Award**)
92. Xiaodan Song, Ching-Yung Lin and Ming-Ting Sun, "**Autonomous Visual Model Building Based on Image Crawling through Internet Search Engines**," *The ACM Workshop on Multimedia Information Retrieval*, New York, October 2004. (**Student Travel Award, University of Washington, School of Engineering**)
93. Xiaodan Song, Ching-Yung Lin and Ming-Ting Sun, "**Cross-Modality Automatic Face Model Training from Large Video Databases**," *The 1st IEEE Workshop on Face Processing in Video*, D.C., June 2004.
94. Ching-Yung Lin and Belle L. Tseng, "**Semantic Multimedia Authentication with Model Vector Signature**," *IEEE Intl. Conf. on Multimedia & Expo*, Taipei, June 2004.
95. Ching-Yung Lin, Apostol Natsev, Belle L. Tseng, Matthew Hill and John R. Smith, "**Pervasive Transcoding Middleware for Geospatial Intelligence Access**," *IEEE Intl. Conf. on Multimedia & Expo*, Taipei, June 2004.
96. Dongqing Zhang, Ching-Yung Lin and John R. Smith, "**Semantic Video Clustering across Sources using Bipartite Spectral Clustering**," *IEEE Intl. Conf. on Multimedia & Expo*, Taipei, June 2004.
97. Milind Naphade, Apostol Natsev, Ching-Yung Lin and John R. Smith, "**Multi-Granular Detection of Regional Semantic Concepts**," *IEEE Intl. Conf. on Multimedia & Expo*, Taipei, June 2004.
98. Qibin Sun, Shuiming Ye, Ching-Yung Lin and Shih-Fu Chang, "**A Crypto Signature Scheme for Image Authentication over Wireless Channel**," *IEEE Intl. Conf. on Multimedia & Expo*, Taipei, June 2004.
99. Winston Hsu, L. Kennedy, C.-W. Huang, S.-F. Chang, Ching-Yung Lin and G. Iyengar, "**News Video Story Segmentation using Fusion of Multi-Level Multi-Modal Features in TRECVID**," *IEEE Intl. Conf. on Acoustics, Speech, and Signal Processing*, Montreal, May 2004.
100. A. Amir, G. Iyengar, Ching-Yung Lin, M. Naphade, A. Natsev, C. Neti, H. J. Jock, J. R. Smith, B. L. Tseng, "**Multimodal Video Search Techniques: Late Fusion of Speech-based Retrieval and Visual Content-based Retrieval**," *IEEE Intl. Conf. on Acoustics, Speech, and Signal Processing*, Montreal, May 2004.
101. John R. Smith, Ching-Yung Lin, Milind Naphade, Apostol Natsev and Belle L. Tseng, "**Validity Weighted Model Vector-based Retrieval of Video**," *SPIE EI 2004 – Storage and Retrieval for Media Databases*, San Jose, January 2004.
102. Winston Hsu, Shih-Fu Chang, Chih-Wei Huang, Lyndon Kennedy, Ching-Yung Lin and Giri Iyengar, "**Discovery and Fusion of Salient Multi-modal Features towards news Story Segmentation**," *SPIE EI 2004 – Storage and Retrieval for Media Databases*, San Jose, January 2004.

### **Journal/Magazine Papers**

103. Arnon Amir, Sankar Basu, Giri Iyengar, Ching-Yung Lin, Milind Naphade, John R. Smith, Savitha Srinivasan and Belle L. Tseng, "**A Multi-modal System for the Retrieval of Semantic Video Events**," *Journal of Computer Vision and Image Understanding*, July 2004.
104. Deepa Kundur, Ching-Yung Lin, Benoit Macq and Heather Yu, "**Scanning the Special Issue on Enabling Security Technologies for Digital Rights Management**," *Proceedings of the IEEE*, June 2004.
105. Belle L. Tseng, Ching-Yung Lin and John R. Smith, "**Video Personalization and Summarization System for Usage Environment**," *Journal of Visual Communications and Image Representation*, May 2004.
106. Belle L. Tseng, Ching-Yung Lin and John R. Smith, "**Using MPEG-7 and MPEG-21 for Personalizing Video**," *IEEE Multimedia Magazine*, Jan.-Mar., 2004.

### **Book Chapters**

107. Xiaodan Song, Ching-Yung Lin, and Ming-Ting Sun, "**Cross-Modality Autonomous Concept Learning**" in *Multimedia Neural Network*, Springer, Sept. 2004.
108. John R. Smith, Ching-Yung Lin, Milind Naphade and Apostol Natsev, "**Multisource Video Clustering Using Semantic Model Vectors**" in *Multimedia Information Retrieval*, AIDA informazioni, March 2004.
109. Ching-Yung Lin, "**Issues on Multimedia Authentication**," in *Multimedia Security: steganography and digital watermarking techniques for protection of intellectual property*, IGP, March 2004.
110. Deepa Kundur, Heather Yu, and Ching-Yung Lin, "**Security and Digital Rights Management for Mobile Content**," in *Content Delivery in Mobile/ Wireless Internet*, Chapter 13, John Wiley & Sons, 2004.

### **[2003]:**

#### **Conference Papers**

111. Ching-Yung Lin, Belle L. Tseng and John R. Smith, "**Video Collaborative Annotation Forum: Establishing Ground-Truth Labels on Large Multimedia Datasets**," *Proc. of NIST Text Retrieval Conf. (TREC)*, Gaithersburg, MD, November 2003.
112. A. Amir, W. Hsu, G. Iyengar, Ching-Yung Lin, M. Naphade, A. Natsev, C. Neti, H. J. Nock, J. R. Smith, B. L. Tseng, Y. Wu, D. Zhang, "**IBM Research TRECVID-2003 System**," *Proc. NIST Text Retrieval Conf. (TREC)*, Gaithersburg, MD, November, 2003.
113. Ching-Yung Lin, Belle L. Tseng, Milind Naphade, Apostol Natsev and John R. Smith, "**MPEG-7 Video Automatic Labeling System**," *ACM Multimedia*, November 2003.
114. C.-S. Li, C. Aggarwal, M. Campbell, Y.-C. Chang and G. Glass, V. Iyengar, M. Joshi, Ching-Yung Lin, M. Naphade, J. R. Smith, B. Tseng, M. Wang, K.-L. Wu, P. S. Yu, "**EpiSPIRE: A system for environmental and public health monitoring**," *Dept. of Homeland Security Advanced Scientific Computing (ASC) Requirements Workshop*, Crystal City, VA, October, 2003.
115. John R. Smith, Ching-Yung Lin and Belle L. Tseng, "**Multimedia resource transcoding for MPEG-21 digital item adaptation**," *Proc. SPIE ITCOM: Internet Multimedia Management Systems IV*, Orlando, FL, September 2003.

116. Ching-Yung Lin, Belle L. Tseng, Milind Naphade, Apostol Natsev and John R. Smith, "**VideoAL: A Novel End-to-End MPEG-7 Automatic Labeling System**," *IEEE Intl. Conf. on Image Processing*, Barcelona, September 2003.
117. Belle L. Tseng, Ching-Yung Lin, Milind Naphade, Apostol Natsev and John R. Smith, "**Normalized Classifier Fusion for Semantic Visual Concept Detection**," *IEEE Intl. Conf. on Image Processing*, Barcelona, September 2003.
118. John R. Smith, Alejandro Jaimes, Ching-Yung Lin, Milind Naphade, Apostol Natsev and Belle L. Tseng, "**Interactive Search Fusion Methods for Video Database Retrieval**," *IEEE Intl. Conf. on Image Processing*, Barcelona, Sep. 2003.
119. Dongqing Zhang, Belle L. Tseng, Ching-Yung Lin and Shih-Fu Chang, "**Accurate Overlay Text Extraction for Digital Video Analysis**," *IEEE Intl. Conf. on Information Technology: Research and Education*, Newark, Aug. 2003.
120. Harriet Nock, Giri Iyengar, Ching-Yung Lin, Milind Naphade, Apostol Natsev, Chalapathy Neti, John R. Smith, and Belle L. Tseng, "**User-trainable Video Annotation using Multimodal Cues**," *ACM SIGIR*, Toronto, Canada, July 2003.
121. Ching-Yung Lin, Belle L. Tseng and John R. Smith, "**VideoAnnEx: IBM MPEG-7 Annotation Tool for Multimedia Indexing and Concept Learning**," *IEEE Intl. Conf. on Multimedia & Expo*, Baltimore, July 2003.
122. Belle L. Tseng, Ching-Yung Lin, Dongqing Zhang and John R. Smith, "**Improved Text Overlay Detection in Videos Using a Fusion-Based Classifier**," *IEEE Intl. Conf. on Multimedia & Expo*, Baltimore, July 2003.
123. Milind Naphade, Ching-Yung Lin, Belle L. Tseng, Apostol Natsev and John R. Smith, "**A Framework for Moderate Vocabulary Semantic Video Concept Detection**," *IEEE Intl. Conf. on Multimedia & Expo*, Baltimore, July 2003.
124. Chung-Sheng Li, C. Aggarwal, M. Campbell, Y.-C. Chang, G. Glass, V. Iyengar, M. Joshi, Ching-Yung Lin, M. Naphade, J. R. Smith, B. L. Tseng, M. Wang, K.-L. Wu, and P. Yu, "**EPI-SPIRE: A Bio-Surveillance System for Environmental and Public Health Activity Monitoring**," *IEEE Intl. Conf. on Multimedia & Expo*, Baltimore, July 2003.

### **Journal/Magazine Papers**

125. Ching-Yung Lin and Shih-Fu Chang, "**Robust Digital Signature for Multimedia Content Authentication: A Summary**," *IEEE Circuits and Systems Magazine*, October 2003.
126. Bill Adams, Giri Iyengar, Ching-Yung Lin, Milind Naphade, Chalapathy Neti, Harriet Nock and John R. Smith, "**Semantic Indexing of Multimedia Content Using Visual, Audio and Text Cues**," *EURASIP Journal on Applied Signal Processing*, 2003

### **Book Chapters**

127. John R. Smith, Ching-Yung Lin, Milind Naphade, Apostol Natsev and Belle L. Tseng, "**Statistical Techniques for Video Analysis and Searching**," in *Video Mining*, Chapter 9, Kluwer Academic Publishers, 2003.

**[2002]:**



## Conference Papers

128. Ching-Yung Lin and Belle L. Tseng, "**Segmentation, Classification, and Watermarking for Multimedia Semantic Authentication**," *IEEE Intl. Workshop on Multimedia Signal Processing*, US Virgin Islands, Dec. 2002.
129. Belle L. Tseng and Ching-Yung Lin, "**Personalized Video Summary using Visual Semantic Annotations and Automatic Speech Transcriptions**," *IEEE Intl. Workshop on Multimedia Signal Processing*, US Virgin Islands, Dec. 2002.
130. Belle L. Tseng, Ching-Yung Lin and John R. Smith, "**Video Personalization and Summarization System**," *IEEE Intl. Workshop on Multimedia Signal Processing*, US Virgin Islands, Dec. 2002.
131. B. Adams, A. Amir, C. Dorai, S. Ghosal, G. Iyengar, A. Jaimes, C. Lang, Ching.-Yung Lin, A. Natsev, C. neti, H. J. Nock, H. Permuter, R. Singh, J. R. Smith, S. Srinivasan, B. L. Tseng, AT Varadaraju and D. Zhang, "**IBM Research TREC-2002 Video Retrieval System**," *NIST TREC-11 Text Retrieval Conference*, Gaithersburg, MD, Nov. 2002.
132. John R. Smith, Ching-Yung Lin, Milind Naphade, Apostol Natsev, and Belle L. Tseng, "**Statistical Modeling and Retrieval of Video Content**," *DIMACS Workshop on Video Mining*, Rutgers Univ., NJ, Nov. 2002.
133. John R. Smith, Ching-Yung Lin, and Milind Naphade, "**Video Texture Indexing using Spatio-Temporal Wavelets**," *IEEE Intl. Conf. on Image Processing*, Rochester, NY, Sep. 2002.
134. John R. Smith, Sankar Basu, Ching-Yung Lin, Milind Naphade, and Belle L. Tseng, "**Interactive Content-based Retrieval of Video**," *IEEE Intl. Conf. on Image Processing*, Rochester, NY, Sep. 2002
135. Milind Naphade, Sankar Basu, John R. Smith, Ching-Yung Lin, and Belle L. Tseng, "**Modeling Semantic Concepts to Support Query by Keywords in Video**," *IEEE Intl. Conf. on Image Processing*, Rochester, NY Sep. 2002.
136. John R. Smith, Ching-Yung Lin, Milind Naphade, Apostol Natsev, and Belle L. Tseng, "**Learning Concept from Video Using Multi-Modal Features**," *Intl. Workshop on Digital Communications (IWDC)*, Capri, Italy, Sep. 2002.
137. Milind Naphade, Sankar Basu, John R. Smith, Ching-Yung Lin, and Belle L. Tseng, "**A Statistical Modeling Approach to Content Based Video Retrieval**," *IEEE Intl. Conf. on Pattern Recognition*, Quebec, Canada, Aug. 2002.
138. Milind Naphade, Ching-Yung Lin, and John R. Smith, "**Learning Semantic Multimedia Representations from a Small Set of Examples**," *IEEE Intl. Conf. on Multimedia & Expo*, Lausanne, Switzerland, Aug. 2002.
139. Belle L. Tseng, Ching-Yung Lin, and John R. Smith, "**Real-Time Video Surveillance for Traffic Monitoring System using Virtual Line Analysis**," *IEEE Intl. Conf. on Multimedia & Expo*, Lausanne, Switzerland, Aug. 2002
140. Ching-Yung Lin, Belle I. Tseng, and John R. Smith, "**Universal MPEG Content Access using Compressed-Domain System Stream Editing Techniques**," *IEEE Intl. Conf. on Multimedia & Expo*, Switzerland, Aug. 2002.
141. Belle L. Tseng, Ching-Yung Lin, and John R. Smith, "**Video Personalization System for Usage Environment**," *SPIE ITCOM Intl. Conf. on Internet Multimedia Management Systems III*, Vol. 4862, Boston, MA, July 2002.

142. Belle L. Tseng, Ching-Yung Lin and John R. Smith, "**Video Summarization and Personalization for Pervasive Mobile Devices**," *SPIE EI 2002 – Storage and Retrieval for Media Databases*, San Jose, Jan. 2002.
143. Milind Naphade, Ching-Yung Lin, John R. Smith, Belle L. Tseng, and Sankar Basu, "**Learning to Annotate Video Databases**," *SPIE EI 2002 – Storage and Retrieval for Media Databases*, San Jose, Jan. 2002.

**[2001]:**

### **Conference Papers**

144. John R. Smith, Savitha Srinivasan, Arnon Amir, Sankar Basu, Giridhran Iyengar, Ching-Yung Lin, Milind Naphade, Dulce Ponceleon and Belle L. Tseng,, "**Intergrating Features, Models, and Semantics for TREC Video Retrieval**," *NIST TREC-10 Text Retrieval Conference*, Gaithersburg, MD, Nov. 2001.
145. Ching-Yung Lin and Shih-Fu Chang, "**Zero-Error Information Hiding Capacity for Digital Images**," *IEEE Intl. Conf. On Image Processing*, Greece, Oct. 2001.
146. John R. Smith, Sankar Basu, Ching-Yung Lin, Milind Naphade and Belle L. Tseng, "**Integrating Features, Models, and Semantics for Content-Based Indexing and Retrieval**," *NSF Workshop in Multimedia Content-Based Indexing and Retrieval*, Sept. 2001.
147. Ching-Yung Lin and Shih-Fu Chang, "**SARI: Self-Authentication-and-Recovery Image Watermarking System**," *ACM Multimedia 2001*, Ottawa, Canada, Sept. 2001.
148. Richard Han, Ching-Yung Lin, John R. Smith, Belle Tseng and Vida Ha, "**Universal Tuner: A Video Streaming System for CPU/Power-Constrained Mobile Devices**," *ACM Multimedia*, Ottawa, Sep. 2001.
149. Ching-Yung Lin, Daby Sow and Shih-Fu Chang, "**Using Self-Authentication-and-Recovery Images for Error Concealment in Wireless Environments**," *SPIE ITCOM/OptiCom*, Denver, Aug. 2001.
150. Ching-Yung Lin and Shih-Fu Chang, "**Watermarking Capacity of Digital Images based on Domain-Specific Masking Effects**," *IEEE Intl. Conf. On Information Technology: Coding and Computing*, Las Vegas, April 2001.

### **Journal/Magazine Papers**

151. Heather Yu, Deepa, Kundur and Ching-Yung Lin, "**Spies, Thieves, Lies: The Battle for Multimedia in Digital Era**," *IEEE Multimedia Magazine*, July 2001.
152. Ching-Yung Lin, Min Wu, Jeffery Bloom, Ingemar Cox, Matt Miller, and, Yui Man Lui, "**Rotation, Scale, and Translation Resilient Watermarking for Images**," *IEEE Trans. on Image Processing*, 2001.
153. Ching-Yung Lin and Shih-Fu Chang, "**A Robust Image Authentication Method Distinguishing JPEG Compression from Malicious Manipulation**," *IEEE Trans. on Circuits and Systems for Video Technology*, Feb. 2001. (*IEEE Circuits and Systems Society Outstanding Young Author Award 2003*)

**[1997-2000]:**

**Conference Papers**

154. Ching-Yung Lin and Shih-Fu Chang, "**Semi-Fragile Watermarking for Authenticating JPEG Visual Content**," *SPIE Security and Watermarking of Multimedia Contents II*, EI '00, San Jose, CA, Jan. 2000
155. Ching-Yung Lin, Min Wu, Jeffery Bloom, Matt Miller, Ingemar Cox, and Yui Man Lui, "**Rotation, Scale and Translation Resilient Public Watermarking for Images**," *SPIE Security and Watermarking of Multimedia Contents II*, EI '00, San Jose, CA, Jan. 2000
156. Ching-Yung Lin and Shih-Fu Chang , "**Distortion Modeling and Invariant Extraction for Digital Image Print-and-Scan Process**," *Intl. Symp. on Multimedia Information Processing (ISMIP)* , Taipei, Taiwan, Dec. 1999.
157. Ching-Yung Lin, "**Public Watermarking Surviving General Scaling and Cropping: An Application for Print-and-Scan Process**," *Multimedia and Security Workshop at ACM Multimedia 99*, Orlando, FL, Oct. 1999.
158. Ching-Yung Lin and Shih-Fu Chang, "**Authentication of Zero-Tree Wavelet Encoded Images**," *ADVENT Project Report*, Columbia University, May 1999.
159. Ching-Yung Lin and Shih-Fu Chang, "**Issues and Solutions for Authenticating MPEG Video**," *SPIE Security and Watermarking of Multimedia Contents*, EI '99, San Jose, CA, Jan. 1999.
160. Ching-Yung Lin and Shih-Fu Chang, "**Generating Robust Digital Signature for Image/Video Authentication**," *Multimedia and Security Workshop at ACM Multimedia 98*, Bristol, UK, Sept. 1998.
161. Ching-Yung Lin and Shih-Fu Chang, "**A Watermark-Based Robust Image Authentication Method Using Wavelets**," *ADVENT Project Report*, Columbia University, April 1998.
162. Ching-Yung Lin and Shih-Fu Chang, "**A Robust Image Authentication Method Surviving JPEG Lossy Compression**," *SPIE Storage and Retrieval of Image/Video Database*, EI '98, San Jose, Jan. 1998.
163. Ching-Yung Lin and Shih-Fu Chang, "**A Robust Image Authentication Method Distinguishing JPEG Compression from Malicious Manipulation**," *CU/CTR Technical Report 486-97-19*, Dec. 1997
164. Ching-Yung Lin and Shih-Fu Chang, "**An Image Authenticator Surviving DCT-based Variable Quantization Table Compressions**," *CU/CTR Technical Report 490-98-24*, Nov. 1997.

**Thesis**

165. Ching-Yung Lin, "**Watermarking and Digital Signature Techniques for Multimedia Authentication and Copyright Protection**," *Ph.D. Thesis*, Columbia University, Dec. 2000. (Advisor: Prof. Shih-Fu Chang)

**[1992-1996]:**

**Conference Papers**

166. Soo-Chang Pei, Chien-Cheng Tseng and Ching-Yung Lin, "**A Parallel Decoding Algorithm for IFS Codes without Transient Behavior**," *IEEE Workshop on Intelligent Signal Processing and Comm. System*, Sendai, Japan, Oct. 1993.
167. Soo-Chang Pei, Chien-Cheng Tseng and Ching-Yung Lin, "**Fractal-based Image Compression Algorithm**," *HD-media Technology and Application Workshop*, pp.8.1-8.6, Taipei, Taiwan, Oct. 1993.
168. Soo-Chang Pei, Chien-Cheng Tseng and Ching-Yung Lin, "**Wavelet Transform and Scale Space Filtering of Fractal Image**," *Conf. on Computer Vision Graphics and Image Processing*, pp.50-57, Nantou, Taiwan, Aug. 1993 ) (**Outstanding Paper Award**.)
169. Soo-Chang Pei and Ching-Yung Lin, "**Detection and Segmentation of Infrared Targets**," *Project report CS 82-0210-D009-007*, Chung Shan Institute of Technology, R.O.C. Department of Defense, 82 pages, June 1993.
170. Soo-Chang Pei, Ching-Yung Lin and Chien-Cheng Tseng, "**Two-dimensional LMS Adaptive Linear Phase Filters**," *IEEE International Symposium on Circuits and Systems*, pp.311-314, Chicago, May 1993.
171. Soo-Chang Pei and Ching-Yung Lin, "**2D Invariant Shape Recognition Using High Order Spectrum**," *Conf. on Computer Vision Graphics and Image Processing*, pp.258-264, Nantou, Taiwan, Aug. 1992.

### **Journal/Magazine Papers**

172. Soo-Chang Pei, Chien-Cheng Tseng and Ching-Yung Lin, "**A Parallel Decoding Algorithm for IFS Codes without Transient Behavior**," *IEEE Trans. on Image Processing*, pp.411-415, March 1996.
173. Soo-Chang Pei, Chien-Cheng Tseng and Ching-Yung Lin, "**Wavelet Transform and Scale Space Filtering of Fractal Image**," *IEEE Trans. on Image Processing*, pp.682-687, May 1995.

### **Thesis**

174. Ching-Yung Lin, "**Fractal and Its Applications to Image/Video Compression**," Master Thesis, *National Taiwan University*, 238 pages, June 1993. (Advisor: Prof. Soo-Chang Pei) (**Acer Lung-Terng Gold Award**.)

### **Issued Patents:**

1. United States Patent: US 6,282,300: Jeffrey Bloom, Ingemar J. Cox, Matthew Miller, Min Wu, Ching-Yung Lin and Yui Man Lui, "Rotation, Scale, and Translation Resilient Public Watermarking for Images using a Log-Polar Fourier Transform", August 28, 2001.
2. United States Patent: US 6,532,541: Shih-Fu Chang and Ching-Yung Lin, "Method and Apparatus for Image Authentication," March 31, 2003.

3. United States Patent: US 6,879,703: Ching-Yung Lin and Shih-Fu Chang, "Method and Apparatus for Watermarking Images," April 12, 2005.
4. United States Patent: US 7,401,062: Chung-Sheng Li, Ching-Yung Lin, Milind Naphade, and John Smith, "Methods for Resource Allocation among Classifiers in Classification Systems," July 15, 2008.
5. United States Patent: US 7,512,628: Catherine Chess, Kate Ehrlich, Mary Helander, Sandra Kearney, Ching-Yung Lin, Sue Medeiros, and Katherline PENCHUK, "System and Method for Constructing a Social Network from multiple Disparate, Heterogeneous Data Sources," March 31, 2009..
6. United States Patent: US 7,545,978: Lisa Amini, Ching-Yung Lin, and Olivier Verscheure, "Methods and Apparatus for Filtering Video Packets for Large-Scale Video Stream Monitoring," June 9, 2009.
7. United States Patent: US 7,610,306: Ching-Yung Lin, Apostol Natsev, Milind Naphade, John Smith, and Belle Tseng, "Multi-Modal Fusion in Content-Based Retrieval," October 27, 2009.
8. United States Patent: US 7,676,739: Lang Christian, Ching-Yung Lin, John Smith, and Belle Tseng, "Methods and Apparatus for Knowledge-base Assisted Annotation," March 9, 2010.
9. United States Patent: US 7,793,212: Hugh Adams, Giri Iyengar, Ching-Yung Lin, Chalapathy Neti, John Smith, and Belle Tseng, "System and Method for Annotating Multimodal Characteristics in Multimedia Documents," September 7, 2010.
10. United States Patent: US 7,912,284: Lisa Amini, Ching-Yung Lin, and Olivier Verscheure, "Methods and Apparatus for Filtering Video Packets for Large-Scale Video Stream Monitoring," March 22, 2011.
11. United States Patent: US 8,165,983: Chung-Sheng Li, Ching-Yung Lin, Milind Naphade, and John R. Smith, "Method and Apparatus for Resource Allocation among Classifiers in Classification System", April 24, 2012.
12. United States Patent: US 8,204,988: Ching-Yung Lin, Spiros Papadimitrion, Jimeng Sun, and Kun-Lung Wu, "Content-based and Time-evolving Social Network Analysis ", June 19, 2012.
13. United States Patent: US 20,130,046,769: Jingrui He, Ravi Konuru, Ching-Yung Lin, Hanghang Tong, and Zhen Wen, "Measuring the Goodness of a Top-K Diversified Ranking List, February 21, 2013.
14. United States Patent: US 8,612,169: Ching-Yung Lin and Hanghang Tong, "Method and System for Detecting Anomalies in a Bipartite Graph," December 17, 2013.
15. United States Patent: US 8,615,515: Ching-Yung Lin and Dmitry A Rakesh, "System and Method for Social Inference based on Distributed Social Sensor System," December 24, 2013.
16. United States Patent: US 8,620,916: Ching-Yung Lin and Dmitry A Rakesh, "System and Method for Social Inference based on Distributed Social Sensor System," December 31, 2013.
17. United States Patent: US 8,645,539: U Kang, Ching-Yung Lin, Jimeng Sun, and Hanghang Tong, "Method and System for Managing and Querying Large Graphs," February 4, 2014.
18. Untied States Patent: US 8,775,335: Ching-Yung Lin, Hanghang Tong, and Fei Wang, "Privacy-Aware On-Line User Role Tracking," July 8, 2014.

19. United States Patent: US 8,818,918: Ching-Yung Lin, Hanghang Tong, Jimeng Sun, and U Kang, "Determining the Importance of Data Items and Their Characteristics using Centrality Measures," August 26, 2014.
20. United States Patent: US 8,838,688: Ching-Yung Lin and Zhen Wen, "Inferring User Interests using Social Network Correlation and Attribute Correlation," September 16, 2014.
21. United States Patent: US 9,009,147: Jingrui He, Ravi Konuru, Ching-Yung Lin, Hanghang Tong, and Zhen Wen, "Finding a Top-K Diversified Ranking List on Graphs," April 14, 2015.
22. United States Patent: US 9,224,104: Ching-Yung Lin, Wan-Yi Sabrina Lin, and Yinglong Xia, "Generating Data from Imbalanced Training Data Sets," December 29, 2015.
23. United States Patent: US20,160,019,659: Yurdaer Doganata, Ching-Yung Lin, David Corbalan Luna, Jordi Mestre, Mercan Topkara, Zhen Wen, and Danny Yeh. "Predicting the Business Impact of Tweet Conversations," January 21, 2016.
24. United States Patent: US9,256,670: Nan Can, Ching-Yung Lin, Fei Wang, and Zhen Wen. "Visualizing Conflicts in Online Messages," February 9, 2016.
25. United States Patent: US9,268,851: Ching-Yung Lin and Zhen Wen. "Ranking Information Content based on Performance Data of Prior Users of the Information Content," February 23, 2016.
26. United States Patent: US9,311,467: Anni Coden, Keith Houck, Ching-Yung Lin, Wan-Yi Lin, P Malkin, Shimei Pan, Youngja Park, and Justin Weisz, "Composite Propensity Profile Detector," April 12, 2016.