



Jin Li

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Career Highlights

Partner Research Manager, Cloud Computing and Storage, Microsoft Research, Redmond, WA.

IEEE Fellow

Microsoft Gold Star Service Award x4

(1999: for contribution in founding Microsoft Research Asia.

2001: for contribution to scalable audio compression.

2006: for contribution to P2P VoD and P2P folder sharing

2010: for contribution to Deduplication in Windows Server.)

Microsoft Technical Community Network (TCN) Storage Technical Achievement Award 2013

Established a highly productive research team with standout productivity

Broad and in-depth technical contribution to a wide array of strategic

Microsoft Products, with financial impact in the order of hundreds of millions dollars per annum: WMA9 Lossless (Reversible Transform), Live

Messenger (NAT traversal, sharing folder), Live Mesh (NAT traversal),

Windows 7 (Teredo), Lync (Bandwidth Estimation & Management, FEC,

Media Gateway, DiffServ, QoS monitoring), Windows 8 ([RemoteFX for](#)

[WAN](#), BranchCache, Miracast), Windows 8 server ([Primary Data](#)

[Deduplication](#), [Erasure Coding in Storage Spaces](#)), Azure ([Local](#)

[Reconstruction Coding](#)), Bing (Global Traffic Management, Bing object

store), Xbox Live (Low Delay Message Protocol).

Extensive contribution to multimedia compression standards: JPEG 2000

(sub-bitplane scanning and rate-distortion optimization, visual weighting and

progressive visual coding, JPEG Interactive Protocol), MPEG 4 (arbitrary

shape wavelet transform), H.264 SVC (motion compensated temporal

filtering).

72 issued US patents.

IEEE ComSoc Distinguished Lecturer, 2011-2012.

Extensive Community Service and Organization Committee Involvement

e.g., Packet Video Workshop 2009 General Chair.

ICME 2011 Lead TPC Chair.

CCNC 2013 TPC Chair

ICME Steering Committee Chair

ACM Multimedia 2016 TPC Chair

Associate Editors/Guest Editors served: IEEE Trans. On Multimedia, Journal of Selected Area of Communication, Journal of Visual Communication and Image Representation, P2P networking and applications, Journal of Communications

Ph.D. with honor in Electrical Engineering, Tsinghua University, 1994.

Affiliated Professor, Tsinghua University, from 2000

Demoed to Xiaoping Deng in 1984. The event brought forth the quote “Computer literacy should start with children” ([计算机普及要从娃娃抓起](#)), an iconic event in China. The event photo and the computer used are in display at Shanghai Science Museum.

Selected Recent Projects and Personal Contribution

Prajna: Cloud Computing Platform, <http://msrccs.github.io/Prajna/> (2013-current) [[Fortune press](#)]

- Prajna is a response to fill the vacuum of big data computing on .Net platform, it is open sourced at <https://github.com/msrccs/Prajna/>.
- Prajna is designed to be a generic distributed computing platform, with core functionality being the execution of an arbitrary closure (C#, F#, native code, etc.) on any remote node, in public cloud or in private cluster.
- Prajna supports interactive big data computing across a cluster with in-memory computation. The programming API is similar to Spark.
- Prajna has a managed web service (Prajna Hub), which can help developer to quickly prototype and host cloud service and run services on mobile Apps.
- Prajna supports distributed machine learning (e.g., distributed neural network trainer using Caffe on each node).
- Jin is the architect and the lead developer, and drives all aspects of the project (feature design, development direction, pitch, marketing/deployment plan). He has written about 70% of the code in the entire project.

Erase coded storage (2006-2012) [[press](#)]

- In 2006, the pervasive wisdom was that 3-way replication was the golden standard for durability in Cloud storage. Jin foresaw that erasure coding (when performed lazily) could be adopted to significantly save storage to achieve similar durability goal. The challenges included redesigning the storage system, and the need to work out new codes that optimizes performance for common failure scenario in storage systems at the cost of rare failure event.
- Engaging with Azure, the combined team developed a Local Reconstruction Code (LRC). Compared with Reed-Solomon code (used in Google and Facebook), LRC reduced storage overhead from 1.5x to 1.29x. The work went into production around 2012.
- LRC receives a number of awards, include:
 - The best paper at [USENIX ATC](#) 2012
 - 2013 Microsoft TCN Storage Technical Achievement Award
- It alone saves Microsoft hundreds of million dollars per annum.
- A slight variation of the code is also deployed in Windows Storage for Windows 8 and Windows Server 2012.
- Jin prototyped the first distributed storage system that used lazy erasure coding. He also led the research team that engaged with Azure and Windows.
- Jin and his group group also owned the implementation of a number of erasure coding implementation in Microsoft, include the code used in Windows Media Server, Skype/Skype for Business, [RemoteFX for WAN](#).

Deduplication (2007-2012) [[press](#)]

- In 2007, believing that there were big opportunities for reducing redundancies within primary data, an area that hadn't been examined because of the impact on server managing live data, Jin and Sudipta Sengupta prototyped a tool that can analyze the data for deduplication savings.
- Collaborating with Windows File Server group, Jin architected and implemented the [Primary Data Deduplication](#) feature in Windows Server 2012 [[paper](#)] and End-to-End Deduplication for Storage Virtualization in Windows Server 2012 R2. Key contributions include a new data chunking algorithm (Jin implemented and shipped the production code), a low RAM footprint indexing data structure to detect duplicate data (based on ChunkStash), and a data partitioning and reconciliation technique, the latter two for scaling index resource usage with data size. It led to major saving to customers (20-82%), and is among top 3 features for Windows File Server introduced at Windows Server 2012. The feature has received rave reviews ([The Register](#), [IT Pro](#), [Arts Technica](#), [IT World](#), [Tech Republic](#)), and there are evidence that some customers upgrading to Windows Server 2012 for the primary data deduplication feature only.

SSD (Flash) based storage (2007-current)

- Noticing that the storage engineers care dearly for disk I/O performance, while Solid State Drive (SSD) disrupts Hard Disk Drive (HDD) in term of I/O performance, Jin conducted a series of research to exploit the benefit of SSD for storage applications. "[FlashStore](#)" has implemented a SSD optimized, low RAM footprint key-value store that organizes storage on flash in a log-structured manner.
- It was tech transferred to Bing Object Store in Microsoft backend. [SkimpyStash](#) has implemented an ultra-low RAM footprint key-value store. The storage layer design of SkimpyStash has been incorporated into [BW-Tree](#), a joint project among [CCS](#), [MSR Database group](#), and Azure DocumentDB team, and is shipping in SQL Server 2014 ([Hekaton](#)) and Azure DocumentDB.

Professional experience

2001.1 – Current Microsoft Research Redmond, WA

Partner Research Manager, Cloud Computing and Storage (CCS) Group

Build a multi-disciplinary research team, with broad and extensive contribution to Microsoft product lines

- Prajna is a response to fill the vacuum of big data computing on .Net platform. It is open sourced at <https://github.com/msrccs/Prajna/>. Designed to be a generic distributed computing platform, with core functionality being the execution of an arbitrary closure (C#, F#, native code, etc.) on any remote node, in public cloud or in private cluster. It supports interactive big data computing across a cluster with in-memory computation. The programming API is similar to Spark. It has also a managed web service (Prajna Hub), which can help developer to quickly prototype and host cloud service and run services on mobile Apps. It also supports distributed machine learning (e.g., distributed neural network trainer using Caffe on each node).

- Bing (Global Traffic Management): developed a set of tools to evaluate global data center performance, select new potential data center for deployment, and direct client traffic to the data center with best performance.
- Bing (Pegasus SSD): developed high performance SSD based object store solution with tight memory footprint and intelligent cache management strategy.
- Azure (Erasure Coding based Storage): developed advanced erasure coding algorithm, failure recovery and storage performance tuning tool that provides cost effective, reliable and high performance storage cluster. The work reduces the data replication rate in Windows Azure Storage from 3x to 1.33x, results in hundreds of millions dollars saving per year, and a capital and operating cost advantage for Microsoft Azure. Please refer to <http://research.microsoft.com/en-us/news/features/erasurecoding-090512.aspx> for details.
- Windows 8 server (Primary Data Deduplication): architected the primary data deduplication feature in windows 8 server. Please refer to: <http://research.microsoft.com/en-us/news/features/deduplication-101311.aspx> for details.
- Windows 8 (RemoteFX for WAN): developed RemoteFX for WAN, which uses a new UDP/FEC transport. This results in a very large positive shift in customer and analyst reception of RDP and its appropriateness for WAN use (which was previously a key product gap).
- Windows 8 (BranchCache): developed the content aware chunking algorithm for Windows 8 BranchCache, a server-less P2P sharing protocol.
- Live Messenger/Live Mesh/Windows 7 (NAT traversal): developed an algorithm that can intelligently guess the port number used by a computer in a P2P communication behind a symmetric NAT. It raises NAT traversal success rate from 60% to 85% across Microsoft product line.
- Xbox Live (Low Delay Message Protocol): developed an adaptive erasure correction protocol that improves the responsiveness of Xbox Live games.
- Lync (Bandwidth Estimation & Management): responsible for Lync's bandwidth management protocol that will intelligently manage the bandwidth of an audio/video conferencing session under complex network conditions.
- Lync (FEC): developed forward error correction (FEC) for Lync to protect against network packet loss in a video conferencing session.
- Lync (QoS monitoring): architect the Quality of Service monitoring and diagnosis platform for Lync.
- WMA9 Lossless (Reversible Transform): developed reversible integer-to-integer transform that enables WMA 9 Lossless codec

1999.4 – 2000.12

Microsoft

Beijing, China

Researcher/Project Leader, Internet Media Group, Microsoft Research Asia

- Invented motion compensated temporal filtering, in which wavelet

decomposition in the temporal direction is applied in hierarchical B-frame fashion. This technology integrates motion compensation into the temporal wavelet filtering direction, and is fundamental to maintaining high quality while scaling video over a large range of bit rates. It is incorporated to H.264/SVC.

- Developed Vmedia, a protocol that breaks scalable coded JPEG 2000 image into small pieces, and streams the pieces over the Internet according to the resolution and region that the user is viewing. It initiated the JPIP standards activity, which became part 9 of the JPEG 2000 suite of standards.
- Pioneered multi-view video coding and depth plus color video coding, leading up to the H.264/MVC standard

1996.11 – 1999.4 Sharp Laboratories of America Camas, WA

Member of Technical Staff, Digital Video Department

- Represent Sharp in MPEG4 and JPEG 2000 standard activity
- Invented a visual weighting tool and progressive visual coding tool for JPEG 2000. Both tools are crucial to boost the subjective quality of image.
- Developed the arbitrary shape wavelet transform for wavelet coding of non-rectangular objects in MPEG4

1994.8 – 1996.11 University of Southern California Los Angeles, CA

Research Associate, Integrated Media Systems Center

- Inventing sub-bitplane scanning, a key ingredient in modern image codecs, and was incorporated into JPEG 2000. Previously, scalable coding scanned by bitplane. Dr. Li showed that additional coding gain can be realized by sequencing the transmission in sub-bitplanes, according to context, using a rate-distortion criterion.

Professional memberships & activities

IEEE Fellow

Associate Editor/Guest Editor: IEEE Trans. On Multimedia, Journal of Selected Area of Communication, Journal of Visual Communication and Image Representation, P2P networking and applications, Journal of Communications

Organization Committee Members and TPCs of Major International Conferences, such as:

ICME 2011 Lead TPC Chair.

CCNC 2013 TPC Chair

ICME Steering Committee Chair

ACM Multimedia 2016 TPC Chair

Honors and Awards

Gold Star service award x4 (1999, 2001, 2006, 2010), Microsoft (1999: for contribution in founding Microsoft Research Asia.

2001: for contribution to scalable audio compression.
 2006: for contribution to P2P VoD and P2P folder sharing
 2010: for contribution to Deduplication in Windows Server.)
 Microsoft Technical Community Network (TCN) Storage Technical
 Achievement Award 2013.
 Microsoft Member Bench Program, 2007.
 Best paper award, USENIX ATC 2012.
 Best paper award, ICME 2009.
 The Young Investigator Award from SPIE/IS&T, 1998
 The Best Ph.D. Thesis Award, Tsinghua University, 1994
 Various prestigious scholarships of Tsinghua Univ. during year 1987-1994, such
 as “Tsinghua Ten Stars”, the Supreme Guanghua Scholarship(1993), the
 Supreme Scholarship of Tsinghua (1991), the Best M.S. Thesis Award (1991),
 etc..
 Championship (ranked 1st) of National Youth Computer Programming
 Competition, China, 1987.

Education

Mar. 1991 - Jun. 1994	Tsinghua University	Beijing, China
Ph.D. in Electrical Engineering, graduated with honor		
Thesis advisor: Prof. Xinggang Lin and Prof. Youshou Wu		
Sep. 1990 - Mar. 1991	Tsinghua University	Beijing, China
M.S. in Electrical Engineering, graduated with honor		
Thesis advisor: Prof. Rensheng Liu		
Sep. 1987 - Sep. 1990	Tsinghua University	Beijing, China
B.S. in Electrical Engineering, graduated with honor		
(Complete 5 year undergraduate program with only 3 years.)		

Patents Issued

- [1] J. Li and S. Lei, “[Arbitrary shape wavelet transform with phase alignment](#)”, US 6,233,357. [Provisional filed Jul. 14, 1997, US1997000052450, Issued May. 15, 2001, cited by [18](#)]
- [2] J. Li, “[Method of visual progressive coding](#)”, US6,327,392, [Filed Jan. 28, 1999, Issued Dec. 4, 2001, cited by [58](#)]
- [3] S. Lei and J. Li, “[Quad-tree embedded image compression and decompression method and apparatus](#)”, US6,356,665, [Filed Dec. 9, 1998, Issued Mar. 12, 2002, cited by [15](#)]
- [4] J. Li and S. Lei, “[Dynamic management of embedded coded images in a digital storage device](#)”, US6,463,177, [Filed Nov. 4, 1998, Issued Oct. 8, 2002, cited by [11](#)]
- [5] W. Zeng, S. Lei and J. Li, “[Re-indexing for efficient compression of palettized images](#)”, US6,522,783, [Filed Nov. 23, 1999, Issued Feb. 18, 2003, cited by [6](#)]
- [6] W. Zeng, J. Li, and S. Lei, “[Joint coding method for images and videos with multiple arbitrarily shaped segments or objects](#)”, US6,553,148,

- [Filed May. 21, 2001, Issued Apr. 22, 2003, cited by 24]
- [7] J. Li, Y. Zhang, Y. Wu and L. Luo, "[Methods and arrangements for compressing image-based rendering \(IBR\) data using alignment and 3D wavelet transform techniques](#)", US6,567,081, [Filed Jun. 20, 2001, Issued May. 20, 2003, cited by 22]
- [8] J. Li and S. Lei, "[Embedded image coder with rate-distortion optimization](#)", US6,625,321, [Filed Jan. 30, 1997, Issued Sept. 23, 2003, cited by 57]
- [9] C. Zhang and J. Li, "[Methods and arrangements for compressing image based rendering data using multiple reference frame prediction techniques that support just-in-time rendering of an image](#)", US 6,693,964 [Filed Mar. 24, 2000, Issued Feb. 17, 2004, cited: 22]
- [10] J. Li and J. Zhou, "[System and method for delivery of dynamically scalable audio/video content over a network](#)", US 6,789,123 [Filed Dec. 28, 2001, Issued Sept. 7, 2004, cited by 17]
- [11] J. Li, H. Sun, H. Li, Q. Zhang and X. Lin, "[Methods and systems for providing random access to structured media content](#)", US 6,807, 550 [Filed Dec. 1, 1999, Issued Oct. 19, 2004, cited by 7]
- [12] C. Zhang, J. Li and Y. Wu, "[Rebinning methods and arrangements for use in compressing image-based rendering \(IBR\) data](#)", US 6,959,120 [filed Oct. 27, 2000, Issued Oct. 25, 2005, cited by 4]
- [13] C. Zhang and J. Li, "[Methods and arrangements for handling concentric mosaic image data](#)", US 6,993,074 [filed Mar. 19, 2001, Issued Jan. 31, 2006, cited by 1]
- [14] C. Zhang, J. Li and Y. Wu, "[Rebinning methods and arrangements for use in compressing image-based rendering \(IBR\) data](#)", US 6,996,294, [filed Oct. 18, 2004, Issued Feb. 7, 2006]
- [15] C. Zhang, J. Li and Y. Wu, "[Rebinning methods and arrangements for use in compressing image-based rendering \(IBR\) data](#)", US 7,065,260, [filed Oct. 13, 2004, Issued June. 20, 2006]
- [16] C. Zhang, J. Li and Y. Wu, "[Rebinning methods and arrangements for use in compressing image-based rendering \(IBR\) data](#)", US 7,110,617, [filed Oct. 18, 2004, Issued Sept. 19, 2006]
- [17] J. Li, "[System and method for embedded audio coding with implicit auditory masking](#)", US 7,110,941, [filed Mar. 28, 2002, Issued Sept. 19, 2006, cited by 5]
- [18] J. Li, "[System and method for receiver-driven streaming in a peer-to-peer network](#)", US 7,174,385, [filed Sept. 28, 2004, Issued Feb. 6, 2007, cited by 39]
- [19] J. Li, H. Sun, H. Li, Q. Zhang, and X. Ling, "[Methods and systems for providing random access to structured media content](#)", US 7,236,988, [filed Apr. 30, 2004, Issued June. 6, 2007, cited by 7] (related to JPIP protocol in JPEG 2000)
- [20] J. Li "[System and method for a media codec employing a reversible transform obtained via matrix lifting](#)", US 7,315,822, [filed Feb. 20, 2004, Issued Jan. 1, 2008, cited by 5] (related to MPEG-4 ALS)
- [21] J. Li "[Progressive to lossless embedded audio coder \(PLEAC\) with multiple factorization reversible transform](#)", US 7,395,210, [filed Nov. 21, 2002, Issued Jul. 1, 2008, cited by 3]
- [22] J. Li "[Efficient implementation of reed-solomon erasure resilient codes in high-rate applications](#)", US 7,418,649, [filed Mar. 15, 2005, Issued Aug. 26, 2008]
- [23] J. Li "[Serverless peer-to-peer multi-party real-time audio](#)

- [communication system and method](#)”, US 7,460,495, [filed Feb. 23, 2005, Issued Dec. 2, 2008, cited by [1](#)]
- [24] J. Li, H. Sun, H. Li, Q. Zhang, and X. Ling, “[Methods and systems for providing random access to structured media content](#)”, US 7,490,104, [filed May. 10, 2004, issued Feb. 10, 2009] (related to JPIP protocol in JPEG 2000)
- [25] J. Li, “[System and method for seamless multiplexing of embedded bitstreams](#)”, US 7,496,234, [filed Jun. 20, 2003, issued Feb. 24, 2009, cited by [2](#)]
- [26] J. Li and Y. Cui, “[Random access read/write media format for an on-demand distributed streaming system](#)”, US 7,536,470, [filed Mar. 12, 2005, issued May. 19, 2009, cited by [4](#)]
- [27] J. Li, “[Coordination of client-driven media streaming from a cluster of non-cooperating peers in a peer-to-peer network](#)”, US 7,539,767, [filed Feb. 5, 2007, issued May. 26, 2009]
- [28] J. Li and C. Zhang, “[Distributed hosting of web content using partial replication](#)”, US 7,546,342, [filed May. 14, 2004, issued Jun. 9, 2009, cited by [8](#)]
- [29] J. Li, “[Metadata structures for mass P2P file sharing](#)”, US 7,558,797, [filed Jun. 30, 2006, issued Jul. 7, 2009, cited by [1](#)]
- [30] J. Li, C. Zhang and P. A. Chou, “[Efficient one-to-many content distribution in a peer-to-peer computer network](#)”, US 7,593,333, [Filed Jul. 7, 2004, issued Sept. 22, 2009, cited by [8](#)]
- [31] J. Li, “[On-demand file transfers for mass P2P file sharing](#)”, US 7,613,770 [filed Jun. 30, 2006, issued Nov. 3, 2009, cited by [3](#)]
- [32] J. Li, S. Sengupta, M. Ponc, M. Chen, P. A. Chou, “[Rate-controllable peer-to-peer data stream routing](#)”, US 7,636,789 [filed Nov. 27, 2007, issued Dec. 22, 2009]
- [33] J. Li, and Y. Cui, “[Digital rights management scheme for an on-demand distributed streaming system](#)”, US 7,639,805 [filed Mar. 12, 2005, issued Dec. 29, 2009, cited by [1](#)]
- [34] D. Teodosiu, P. A. Chou, A. Heron, C. Huang, “[Scheduling connections between peers in a peer-to-peer file sharing environment](#)”, US 7,643,491 [filed Dec. 16, 2005, issued Jan. 5, 2010]
- [35] J. Li, “[System and method for distributed streaming of scalable media](#)”, US 7,664,109, [filed Sept. 3, 2004, issued Feb. 16, 2010]
- [36] P. Y. Simard, P. A. Viola, and J. Li, “[Credit-based peer-to-peer storage](#)”, US 7,707,248, [filed Jun. 25, 2007, issued Apr. 27, 2010]
- [37] S. Liu, S. Sengupta, M. Chiang, J. Li and P. A. Chou, “[Models for routing tree selection in peer-to-peer communications](#)”, US 7,738,406, [filed Oct. 8, 2008, Issued Jun. 15, 2010]
- [38] J. Li and Y. Sun, “[Distributed source coding with context](#)”, US 7,743,309, [filed Mar. 17, 2006, Issued Jun. 22, 2010]
- [39] J. Li “[Receiver driven streaming in a peer-to-peer network](#)”, US 7,752,327, [filed Feb. 5, 2007, Issued Jul. 6, 2010]
- [40] J. Li, J. Johnston, W. Y. Chan, “[Perceptual, scalable audio compression](#)”, US Patent 7,835,904, [filed Mar. 3, 2006, Issued Nov. 16, 2010]
- [41] J. Li, “[Seamless multiplexing of embedded bitstreams](#)”, US 7,840,079, [filed Jan. 5, 2009, Issued Nov. 23, 2010]
- [42] J. Li and L. He, “[Automated NAT traversal for peer-to-peer networks](#)”, US 7,912,046. [filed Feb. 11, 2005, Issued, Mar. 22, 2011]
- [43] C. Huang, M. Chen and J. Li, “[Multiple protection group codes having](#)

- [maximally recoverable property](#)”, US Patent 7, 904, 782 [filed Mar. 9, 2007, issued Mar. 8, 2011]
- [44] C. Huang, M. Chen, and J. Li, “[Erasure resilient codes having multiple protection groups](#)”, US Patent 7, 930, 611 [filed Mar. 9, 2007, issued Apr. 19, 2011]
 - [45] J. Li, D. Teodosiu, P. A. Chou, C. Huang, E. Schwartz, J. T. Spivey, Y. Wu, A. K. Heron, “[Content synchronization in a file sharing environment](#)”, US Patent 7, 953, 785 [filed Jun. 2006, issued May. 31, 2011]
 - [46] J. Li, L. He and J. Liang, “[Distributed data storage using erasure resilient coding](#)”, US Patent 8,051,362 [filed Jun. 15, 2007, Issued Nov. 1, 2011]
 - [47] J. Li, S. Sengupta and V. Vasudevan, “[Proximity guided data discovery](#)”, US Patent 8, 073, 978 [filed Jun. 24, 2009, Issued Dec. 6, 2011]
 - [48] J. Wang, C. Huang, S. Sengupta, and J. Li, “[ISP-friendly rate allocation for P2P applications](#)”, US Patent 8, 082, 358 [filed Sep. 30, 2008, Issued Dec. 20, 2011]
 - [49] M. Chen, C. Huang, and J. Li, “[Optimizing XOR-based codes](#)”, US Patent 8,209,577 [filed Dec. 20, 2007, Issued Jun. 26, 2012]
 - [50] Y. -Z. Huang, M. Jain, J. Li, S. Mehrotra, S. Sen, S. Sengupta, “[Optimized transport protocol for delay-sensitive data](#)”, US Patent 8,228,800, [filed Feb. 3, 2009, Issued Jul. 24, 2012]
 - [51] C. Huitema, W. A. S. Buxton, J. E. Paff, Z. Liu, R. Hedge, Z. Zhang, K. Quinn, J. Li, M. Pahud, “[Ambulatory presence features](#)”, US Patent 8,253,774, [filed Mar. 30, 2009, Issued Aug. 28, 2012]
 - [52] M. Chen, M. Ponc, S. Sengupta, J. Li, and P. A. Chou, “[Rate-controllable peer-to-peer data stream routing](#)”, US Patent 8,260,951, [filed Nov. 4, 2009, Issued Sep. 4, 2012]
 - [53] S. Sengupta, M. Chen, J. Li, P. A. Chou, M. Ponc, “[Multi-rate peer-assisted data streaming](#)”, US Patent 8,260,952, [filed Jan. 31, 2008, Issued Sep. 4, 2012]
 - [54] J. Li, J-H. Lin, Aravind Krishnamachari, “[Cuckoo hashing to store beacon reference data](#)”, US Patent 8,305,271 [filed Mar. 17, 2010, Issued Nov. 6, 2012]
 - [55] C. Huang, N. Holt, A. Greenberg, and J. Li, “Using DNS reflection to measure network performance”, US Patent 8,326,980 [filed Apr. 28, 2010, Issued Dec. 4, 2012]
 - [56] Z. Zhang, X.-D. Huang, J. Li, R. Hedge, K. Quinn, M. Pahud, J. Dalal, “[Force-feedback within telepresence](#)”, US Patent 8,332,755, [filed May. 27, 2009, issued Dec. 11, 2012]
 - [57] J. Li, C. Huang, Y. Wang, R. Yang, “[Quality of service \(QoS\) based systems, networks, and advisors](#)”, US Patent 8,335,163, [filed Oct. 27, 2009, issued Dec. 18, 2012]
 - [58] J. Li and Y. Cui, “[Digital right management scheme for an on-demand distributed streaming system](#)”, US Patent 8,375,456 [filed Nov. 12, 2009, Issued, Feb. 12, 2013]
 - [59] J. Li, H. Khan, G-W. Shieh, M. Jain, “[Estimating communication conditions](#)”, US Patent 8,441,930 [filed Dec. 21, 2009, Issued May. 14, 2013]
 - [60] S. Mehrotra, T. L. Wynn, J. Li, S. Sengupta, “[Congestion control for delay sensitive applications](#)”, US Patent 8,553,540 [filed Apr. 16, 2010, issued Oct. 8, 2013]

- [61] J. Li, H. Chen, S. Jain, S. Mehrotra, "[Kernel awareness of physical environment](#)", US Patent 8,570,864 [filed Dec. 17, 2010, issued Oct. 29, 2013]
- [62] S. K. Cunningham, J. Li, M. Pahud, R. K. Hedge, Z. Zhang, "[Universal translator](#)", US Patent 8,600,731 [filed Feb. 4, 2009, issued Dec. 3, 2013]
- [63] P. Gopalakrishnan, J. Li, C. H. Wittenberg, "[Network address translation traversals for peer-to-peer networks](#)", US Patent 8,631,144 [filed Jun. 29, 2007, issued Jan. 14, 2014]
- [64] J. Li, V. Cadambe, C. Huang, "[Storage codes for data recovery](#)", US Patent 8,645,799, [filed Dec. 31, 2010, issued Feb. 4, 2014]
- [65] Y. Wu, Y. Zhao, B. Li, M. Chen, J. Li, P. A. Chou, "[Multiparty real time content delivery](#)", US Patent 8,824,470 [filed Jun. 2, 2010, issued Sep. 2, 2014]
- [66] J. Li, C. Huang, and K. W. Ross, "[Smart pre-fetching for peer assisted on-demand media](#)", US Patent 8,832,290 [filed Feb. 23, 2007, issued Sept. 9, 2014]
- [67] S. K. Cunningham, R.K. Hedge, K. Quinn, J. Li, P. A. Chou, Z. Zhang and D. S. Tan, "[Detecting reactions and providing feedback to an interaction](#)", US Patent 8,670,018 [filed May. 27, 2010].
- [68] C. Huang, I. I. Batanov, J. Li, "[Global traffic management using modified hostname](#)", US Patent 8,732,268 [filed Apr. 19, 2011]
- [69] Y. Wu, Y. Zhao, B. Li, M. Chen, J. Li, P. A. Chou, "[Multiparty real time content delivery](#)", US Patent 8,824,470 [filed Jun. 2, 2010]
- [70] C. Huang, D. A. Maltz, J. Li, M. Zhang, C. Zhang, K. W. Ross, "[Determination of unauthorized content source](#)", US Patent 8,898,292 [filed Aug. 26., 2011]
- [71] S. Sengupta, B. Debnath, J. Li, R. N. Desai, P. A. Oltean, "[Fast and low-RAM-footprint indexing for data deduplication](#)", US Patent 8,935,487 [filed Dec. 28, 2010]
- [72] C. Huitema, W. Buxton, J. Paff, Z. Liu, R. Hedge, Z. Zhang, K. Quinn, J. Li, M. Pahud, "[Ambulatory presence features](#)", US 8,941,710 [filed: Aug. 13, 2012]

Journal Papers

- [1] H. Shen, Y. Lin, and J. Li, "[A social-network-aided efficient peer-to-peer live streaming system](#)", IEEE/ACM Trans. On Networking, Vol. 23, No. 3, pp.987-1000, Apr. 2014.
- [2] X. Chen, M. Chen, B. Li, Y. Zhao, Y. Wu and J. Li, "[Celebrity, a low-delay multi-party conferencing solution](#)", IEEE Journal of Selected Areas in Communications, Vol. 31, no. 9, Sep. 2013.
- [3] H. Shen, Z. Li, Y. Lin and J. Li, "[SocialTube: P2P-assisted Video Sharing in Online Social Networks](#)", IEEE Trans. On Parallel and Distributed Systems, May. 29, 2013.
- [4] C. Huang, M. Chen and J. Li, "[Pyramid Codes: Flexible Schemes to Trade Space for Access Efficiency in Reliable Data Storage Systems](#)," ACM Transactions on Storage, 9(1), March, 2013.
- [5] H. Shen, Z. Li and J. Li, "[A DHT-aided chunk-driven overlay for scalable and efficient peer-to-peer live streaming](#)", IEEE Trans. On Transactions on Parallel and Distributed Systems, Issue: 99, Oct. 22, 2012.
- [6] X. Chen, M. Chen, B. Li, Y. Zhao, Y. Wu and J. Li, "[Celebrity: a low-delay multi-party conferencing solution](#)", IEEE Journal on Selected Areas in Communications - 2012 Special Issue on Emerging Technologies in Communications.

- [7] M. Chen, M. Ponc, S. Sengupta, J. Li, and P. A. Chou, "[Utility Maximization in Peer-to-Peer Systems with Applications to Video Conferencing](#)", *IEEE/ACM Transactions on Networking*, vol. 20, no. 6, Dec. 2012.
- [8] M. Ponc, S. Sengupta, M. Chen, J. Li, and P. A. Chou, "[Optimizing Multi-rate Peer-to-Peer Video Conferencing Applications](#)", *IEEE Transactions on Multimedia*, vol. 13, no. 5, Oct. 2011.
- [9] S. Sengupta, S. Liu, M. Chen, M. Chiang, J. Li, and P. A. Chou, "[P2P Streaming Capacity](#)", *IEEE Trans. On Information Theory*, Vol. 57, No. 8, Aug. 2011.
- [10] S. Mehrotra, Jin Li, and Ying-zong Huang, "[Optimizing FEC Transmission Strategy for Minimizing Delay in Lossless Sequential Streaming](#)", *IEEE Transactions on Multimedia*, vol. 13, no. 5, Oct. 2011.
- [11] J. Li, "[On peer-to-peer \(P2P\) content delivery](#)", *Peer-to-Peer Networking and Applications*, Vol. 1, Issue 1, pp. 45-63, Mar. 2008.
- [12] J. Li, Y. Cui and B. Chang, "PeerStreaming: Design and Implementation of an on-demand distributed streaming system", *ACM Multimedia Systems Journal*, 2007.
- [13] J. Li, "Low noise reversible MDCT (RMDCT) and its application in progressive to lossless embedded audio coding", *IEEE Trans. On Signal Processing*, vol. 53, no. 5, May. 2005, pp. 1870-1880.
- [14] C. Zhang and J. Li, "On the Compression and Streaming of Concentric Mosaic Data for Free Wandering in a Realistic Environment over the Internet", *IEEE Trans. On Multimedia*, vol. 7, no. 6, Dec. 2005, pp.1170-1182.
- [15] J. Duan and J. Li, "Compression of the layered depth image", *IEEE Trans. On Image Processing*, vol. 12, no. 3, Mar. 2003, pp.365-372.
- [16] J. Li and H. Sun, "On interactive browsing of large images", *IEEE Trans. On Multimedia*, vol. 5, no. 4, pp. 581-590, Dec. 2003.
- [17] Y. Wu, C. Zhang and J. Li, "Smart rebinning for the compression of concentric mosaic", *IEEE Trans. on Multimedia*, vol. 4, no. 3, pp. 332-342, Sept. 2002.
- [18] Y. Wu and J. Li, "Concentric mosaic compression with rebinning of slits (ROSS) ", *IEEE Signal Processing Letters*, vol. 9, no. 9, pp. 269-271, Sept. 2002.
- [19] L. Luo, Y. Wu, J. Li and Y. Zhang, "3D wavelet compression and progressive inverse wavelet synthesis rendering", *IEEE Trans. On Image Processing*, Vol. 11, No. 7, pp. 802-816, Jul. 2002.
- [20] G. Xing, J. Li, S. Li and Y. Zhang, "Arbitrarily shaped video object coding by wavelet", *IEEE Trans. On Circuits and Systems for Video Technology*, Vol. 11, No. 10, pp. 1135-1139, Oct. 2001.
- [21] J. Li, H. Shum and Y. Zhang, "On the compression of the image based rendering scene: a comparison among block, reference and wavelet coders", *International Journal on Image and Graphics*, Vol. 1, No. 1, pp.45-61, 2001.
- [22] J. Li and S. Lei, "An embedded still image coder with rate-distortion optimization", *IEEE Trans. On Image Processing*, Vol. 8, No. 7, pp. 913-924, Jul. 1999.
- [23] J. Li and J. Kuo, "Image compression with a hybrid wavelet-fractal coder", *IEEE Trans. On Image Processing*, Vol. 8, No. 6, pp. 868-873, Jun. 1999.
- [24] P. Cheng, J. Li and J. Kuo, "Rate control for embedded wavelet video coder", *IEEE Trans. On Circuit and System for Video Technology*, Vol. 7, No. 4, pp. 696-702, Aug. 1997.
- [25] K. Liang, J. Li and J. Kuo, "Embedded wavelet coder with multistage vector quantization," *the International Journal on Imaging Systems and Technology*,

Vol. 8, No. 5, pp.444-449, 1997.

- [26] J. Li, J. Li, and J. Kuo, "Layered DCT still image compression," *IEEE Trans. On Circuit and System for Video Technology*, Vol. 7, No.2, pp.440-443, Apr. 1997.
- [27] J. Li, X. Lin, and J. Kuo, "Boundary-control vector (BCV) motion field representation and estimation by using a Markov random field model", *Journal of Visual Communication and Image Representation*, Vol. 7, No. 3, pp. 230-243, Sep. 1996.
- [28] J. Li and X. Lin, "Sequential image coding based on the multiresolution tree architecture," *IEE Electronics Letters*, 29, pp. 1545--1547, 1993.
- [29] J. Li, X. Lin, and Y. Wu, "Image coding with neural nets," *Journal of China Institute of Communications*, 14(6), pp. 84--89, December 1993.

Book Chapter

- [1] J. Li, "Image Compression – The Mechanics of JPEG 2000", in MSRI modern signal processing series.
- [2] J. Li, "Scalable audio coding", in *Multimedia over IP: Wired and Wireless Networks*, M. Schaar and P. A. Chou eds.

Conference Papers

- [1] X. Hua and J. Li, "[Prajna: towards recognizing whatever you want from images without image labeling](#)", AAAI-15, Texas, Austin, Jan. 25-30, 2015.
- [2] G. Liu, H. Shen, H. Chandler, and J. Li, "[Measuring and evaluating live content consistency in a large scale CDN](#)", ICDCS 2014, Madrid, Spain.
- [3] X. Hua, L. Yang, J. Wang, J. Wang, M. Ye, K. Wang, Y. Rui and J. Li, "[Clickage: Towards Bridging the semantic and intent gaps via mining logs of search engines](#)", ACM Multimedia 2013, Oct. 2013, Barcelona, Spain.
- [4] Q. Xu, Z. Mao, S. Mehrotra, and J. Li, "[Proteus: network performance forecast for real-time interactive mobile applications](#)", Mobisys 2013, Jun. 23-28, 2013, Taipei, Taiwan.
- [5] S. Mehrotra, H. Chen, S. Jain, J. Li, B. Li, and M. Chen, "[Bandwidth management for Mobile Media Delivery](#)", GLOBECOM 2012, Dec. 2012, Anaheim, CA.
- [6] Z. Li, H. Shen, G. Liu, and J. Li, "[SOS: A Distributed Mobile Q&A System Based on Social Networks](#)", ICDCS 2012, Jun. 2012, Macau, China.
- [7] A. El-Shimi, R. Kalach, A. Kumar, J. Li, A. Oltean, and S. Sengupta, "Primary Data Deduplication -- Large Scale Study and System Design", USENIX Annual Technical Conference, Boston, USA, June 2012.
- [8] Cheng Huang, Huseyin Simitci, Yikang Xu, Aaron Ogus, Brad Calder, Parikshit Gopalan, Jin Li, and Sergey Yekhanin, "Erasure Coding in Windows Azure Storage", USENIX Annual Technical Conference, Boston, USA, June 2012.
- [9] V. R. Cadambe, C. Huang, J. Li, "Permutation Code: Optimal Exact-Repair of a Single Failed Node in MDS Code Based Distributed Storage Systems," IEEE ISIT, August 2011.
- [10] C. Zhang, C. Huang, K. W. Ross, D. A. Maltz, and J. Li, "Inflight Modification of Content: Who are the Culprits", 4th USENIX workshop on Large-Scale Exploits of Emerging Threads (LEET'2011), Boston, MA, Mar. 2011 (acceptance rate: 30%).
- [11] B. Debnath, S. Sengupta, and J. Li, "SkimpyStash: RAM space skimpy key-value store on Flash-based storage", ACM SIGMOD 2011, Athens, Greece, Jun. 2011. (acceptance rate: 23%)
- [12] Y. Wang, C. Huang, J. Li, P. A. Chou, Y. R. Yang, "QoSaaS: Quality of

- Service as a Service”, The Workshop on Hot Topics in Management of Internet, Cloud, and Enterprise Networks and Services (Hot-ICE '2011), Boston, MA, Apr. 2011. (acceptance rate: 54%)
- [13] B. Debnath, S. Sengupta, J. Li, D. Lilja, and D. Du, “BloomFlash: Bloom Filter on Flash-based Storage”, Proc. ICDCS, 2011, Minneapolis, MN, USA, Jun. 2011. (9 pages, acceptance rate: 15%)
 - [14] Y. A. Wang, C. Huang, J. Li, and K. W. Ross, “Estimating the performance of hypothetical cloud service deployments: a measurement-based approach”, Proc. INFOCOM 2011, Shanghai, China, Apr. 2011. (9 pages, acceptance rate: 16%)
 - [15] C. Huang, D. A. Maltz, A. Greenberg, and J. Li, “Public DNS system and global traffic management”, Proc. INFOCOM 2011, Shanghai, China, Apr. 2011. (9 pages, acceptance rate: 16%)
 - [16] L. Zhao, H. Chandler, J. Stokes, H. Shen and J. Li “Towards P2P-based multimedia sharing in user generated contents”, Proc. INFOCOM 2011, Shanghai, China, Apr. 2011. (9 pages, acceptance rate: 16%)
 - [17] S. Mehrotra, J. Li, S. Sengupta, M. Jain, S. Sen “Hybrid Window and Rate Based Congestion Control for Delay Sensitive Applications”, Proc. GLOBECOM 2010, Miami, FL, Dec. 2010.(acceptance rate:35%)
 - [18] B. Debnath, S. Sengupta, and J. Li, “FlashStore: High Throughput Persistent Key-Value Store”, in Proc. 36th International Conference on Very Large Data Bases (VLDB'2010), Singapore, September 2010. (12 pages, acceptance rate: 18%)
 - [19] H. Shen, L. Zhao, Z. Li, “A DHT-aided chunk-driven overlay for scalable and efficient peer-to-peer live streaming”, ICPP 2010.
 - [20] S. Mehrotra, J. Li, and Y. Huang, “Minimizing delay in lossless sequential data streaming”, Proc. International Conference on Multimedia (ICME'2010), Singapore, Jul. 2010. (Oral paper, top 15% of submission)
 - [21] S. Liu, M. Chen, S. Sengupta, M. Chiang, J. Li, and P. A. Chou, “P2P Streaming Capacity under Node Degree Bound”, International Conference in Distributed Computing Systems (ICDCS) 2010, Genoa, Italy, June 2010. (12 pages, acceptance rate: 14%)
 - [22] C. Huang, N. Holt, Y. A. Wang, A. Greenberg, J. Li, and K. W. Ross, “A DNS Reflection Method for Global Traffic Management”, Proc. USENIX Annual Technical Conference (ATC'10), Boston, MA, Jun. 2010. (acceptance rate: 17%)
 - [23] B. Debnath, S. Sengupta, and J. Li, “ChunkStash: Speeding up Inline Storage Deduplication using Flash Memory”, Proc. USENIX Annual Technical Conference (ATC) 2010, Boston, MA, June 2010. (14 pages, acceptance rate: 17%)
 - [24] A. Mondal, R. Cutler, C. Huang, J. Li, and A. Kuzmanovic, “SureCall: Towards Glitch-Free Real-Time Audio/Video Conferencing”, Proc. IEEE International Workshop on Quality of Service (IWQoS 2010), Beijing, China, Jun. 2010. (acceptance rate: 24%)
 - [25] A. Mondal, C. Huang, J. Li, M. Jain, and A. Kuzmanovic, “A Case for WiFi Relay: Improving VoIP Quality for WiFi Users”, Proc. IEEE International Conference on Communications (ICC 2010), Cape Town, South Africa, May. 2010. (acceptance rate: 40%)
 - [26] A. Pathak, Y. A. Wang, C. Huang, A. Greenberg, Y. C. Hu, R. Kern, J. Li, and K. W. Ross, “Measuring and Evaluating TCP Splitting for Cloud Services”, Proc. Passive and Active Measurement Conference (PAM 2010), Zurich, Switzerland, Apr. 2010. (acceptance rate: 29%)
 - [27] S. Liu, M. Chiang, M. Jourdain, and J. Li, "Congestion Location Detection -

- Methodology, Algorithm & Performance", IEEE International Workshop on Quality of Service (IWQoS'09), Charleston, SC, Jul. 2009. (acceptance rate: 34%)
- [28] Y. Wu, Y. C. Hu, J. Li and P. A. Chou, "The Delay Region for P2P File Transfer", IEEE International Symposium on Information Theory (ISIT), Seoul, Korea, June 2009. (acceptance rate: 61%)
 - [29] Y. Huang, S. Mehrotra, J. Li, "A hybrid FEC-ARQ protocol for low-delay lossless sequential data streaming", 2009 IEEE International Conf. on Multimedia and Expo (ICME'2009), Jun. 28-Jul. 3, 2009, New York City. (oral acceptance rate: 22%)
 - [30] M. Ponc, S. Sengupta, M. Chen, J. Li, P. A. Chou, "Multi-rate peer-to-peer video conferencing: a distributed approach using scalable coding", 2009 IEEE International Conf. on Multimedia and Expo (ICME'2009), Jun. 28-Jul. 3, 2009, New York City. (oral acceptance rate: 22%, best paper award)
 - [31] A. Wang, C. Huang, J. Li, K. W. Ross, "Queen – Estimating Packet Loss Rate between Arbitrary Internet Hosts," The 10th Passive and Active Measurement Conference, Apr. 1-3, 2009, Seoul, Korea. (acceptance rate: 31%)
 - [32] V. Vasudevan, S. Sengupta, J. Li, "A First Look at Media traffic in the Global Enterprise", The 10th Passive and Active Measurement Conference, Apr. 1-3, 2009, Seoul, Korea. (acceptance rate: 31%)
 - [33] C. Huang, A. Wang, J. Li, K. W. Ross, "Measuring and Evaluating Large-Scale CDNs," IMC, Oct. 2008 (acceptance rate: 17%, note: withdraw from the conference due to Microsoft business reasons).
 - [34] J. Wang, C. Huang, J. Li, "On ISP-Friendly Rate Allocation for Peer-Assisted VoD," ACM MM 2008, Vancouver, BC, Oct. 27-31, 2008. (10 pages, acceptance rate: 17%)
 - [35] S. Sengputa, M. Chen, P. A. Chou, and J. Li, "On optimality of routing for multi-source multicast communication scenarios with node uplink constraints", ISIT 2008, Toronto, Canada, Jul. 6-11, 2008.
 - [36] M. Chen, M. Ponc, S. Sengupta, J. Li, P. A. Chou, "Utility maximization in peer-to-peer systems", ACM SIGMETRICS 2008, Annapolis, Maryland, Jun. 2-6, 2008. (12 pages, acceptance rate: 18%)
 - [37] C. Huang, A. Wang, J. Li, K. W. Ross, "Understanding hybrid CDN-P2P: why Limelight needs its own RedSwoosh", NOSSDAV'08, Braunschweig, Germany, May. 28-30, 2008. (acceptance rate: 34%)
 - [38] M. Chen, S. Sengupta, M. Ponc, P. A. Chou, J. Li, "Peer-to-peer utility maximization", CISS'08, Princeton, NJ, Mar. 2008.
 - [39] J. Li, "Locality aware peer assisted delivery: the way to scale Internet video to the world", 16th Packet Video workshop (PV 2007), Lausanne, Switzerland, Nov. 2007.
 - [40] C. Huang, J. Li, and M. Chen, "On optimizing XOR-based codes for fault-tolerant storage applications", in 2007 IEEE Information Theory Workshop (ITW 2007), Sep. 2007, Lake Tahoe, CA.
 - [41] C. Huang, J. Li, K. W. Ross, "Can Internet Video-on-Demand be profitable", in ACM SIGCOMM 2007, Aug. 2007, Kyoto, Japan. (12 pages, acceptance rate: 14%)
 - [42] C. Huang, M. Chen and J. Li, "Pyramid codes: flexible schemes to trade space for access efficiency in reliable data storage systems", in the 6th IEEE International symposium on network computing and applications (NCA 2007), Jul. 2007, Cambridge, MA.
 - [43] M. Chen, C. Huang, and J. Li, "On the maximally recoverable property for multi-protection group codes", in 2007 IEEE International Symposium on

Information Theory (ISIT 2007), Jun. 2007, Nice, France.

- [44] C. Huang, J. Li, K. W. Ross, "Peer-assisted VoD: making internet video distribution cheap", in the 6th International Workshop on Peer-to-peer systems (IPTPS 2007), Feb. 2007, Bellevue, WA.(acceptance rate:23%)
- [45] J. Li, and J. D. Johnston, "Perceptually layered scalable coding", in 2006 40th Asilomar Conf. on Signals, Systems and Computers, Oct. 2006, pp.2125-2129, Pacific Grove, CA.
- [46] A. Conceicao, J. Li, D. Florencio, F. Kon, "Is IEEE 802.11 Ready for VoIP", in 2006 8th workshop on Multimedia Signal Processing, Oct. 2006, Victoria, BC.
- [47] J. Li, "Adaptive erasure resilient coding in distributed storage", 2006 *International Conference on Multimedia & Expo (ICME'2006)*, Toronto, Canada, Jul. 9-12, 2006.
- [48] C. Huang and J. Li, "DISCOVER: distributed collaborative video recorder", 2006 *International Conference on Multimedia & Expo (ICME'2006)*, Toronto, Canada, Jul. 9-12, 2006.
- [49] Y. Sun and J. Li, "Distributed source coding with context modeling", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP'2006)*, Toulouse, France, May. 15-19, 2006.
- [50] J. Li and Q. Huang, "Erasure resilient codes in peer-to-peer storage cloud", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP'2006)*, Toulouse, France, May. 15-19, 2006.
- [51] C. Huang, P. A. Chou, J. Li, and C. Zhang, "Adaptive peer-to-peer streaming with MutualCast", *International Packet Video Workshop 2006*, Hang Zhou, China, Apr. 20-21, 2006.
- [52] J. Li, "PeerStreaming: an on-demand peer-to-peer media streaming solution based on a receiver-driven streaming protocol", in Proc. IEEE 7th Workshop on Multimedia Signal Processing, Shanghai, China, Nov. 2005. pp. 197-200.
- [53] J. Li, P. A. Chou and C. Zhang, "Mutualcast: an efficient mechanism for content distribution in a P2P network", Proc. Acm Sigcomm Asia Workshop, Beijing, China, Apr. 10-12, 2005.
- [54] J. Li, "The efficient implementation of Reed-Solomon high rate erasure resilient codes", *IEEE International Conference on Acoustics, Speech, and Signal Processing (2005)*, Philadelphia, PA, Mar. 19-23, 2005.
- [55] J. Li, "The seamlessly multiplexed embedded codec (SMEC) and its application in image coding", *IEEE International Conference on Image Processing (2004)*, Singapore, Oct. 2004.
- [56] J. Li and C. Zhang, "Distributed hosting of web content with erasure coding and unequal weight assignment", *IEEE International Conference on Multimedia Expo (2004)*, Taipei, Jun. 27-30, 2004.
- [57] Z. Wen, Z. Liu, M. Cohen, J. Li, K. Zheng, T. Huang, "Low bit-rate video streaming for face-to-face teleconference", *IEEE International Conference on Multimedia Expo (2004)*, Taipei, Jun. 27-30, 2004.
- [58] J. Li, "Reversible FFT and MDCT via matrix lifting", *IEEE International Conference on Acoustics, Speech, and Signal Processing (2004)*, Montreal, Quebec, May. 23-28, 2004.
- [59] J. Li, "A progressive to lossless embedded audio coder (PLEAC) with reversible modulated lapped transform", *IEEE International Conference on Multimedia Expo (2003)*, Baltimore, MD, Jul. 6-10, 2003. (re-published due to cancellation of ICASSP 2003).
- [60] J. Li, "A progressive to lossless embedded audio coder (PLEAC) with reversible modulated lapped transform", *IEEE International Conference on Acoustics, Speech, and Signal Processing (2003)*, Hong Kong, China, Apr. 6-

10, 2003.

- [61] J. Li, "Embedded audio coding (EAC) with implicit psychoacoustic masking", *ACM Multimedia 2002*, Nice, France, Dec.1-6, 2001.(acceptance rate: 18%)
- [62] L. Luo, J. Li, S. Li, Z. Zhuang and Y. Zhang. "Motion compensated lifting wavelet and its application in video coding", *IEEE International Conference on Multimedia and Expo (2001)*, Tokyo, Japan, Aug. 2001.
- [63] J. Zhou and J. Li, "Scalable audio streaming over the internet with network-aware rate-distortion optimization", *IEEE International Conference on Multimedia and Expo (2001)*, Tokyo, Japan, Aug. 2001.
- [64] J. Duan and J. Li, "Compression of the layered depth image", in *IEEE Data Compression Conference (DCC'2001)*, Snowbird, Utah, Mar. 2001, pp.331-340.
- [65] C. Zhang and J. Li, "Interactive browsing of 3D environment over the Internet", in *Visual Communication and Image Processing 2001 (VCIP 2001)*, SPIE Vol. 4310, No. 51, San Jose, CA, Jan 2001.
- [66] J. Li and H. Sun, "A virtual media (Vmedia) access protocol and its application in interactive image browsing", *SPIE, IS&T and ACM SIG Multimedia, Multimedia Computing and Networking 2001 (MMCN'01)*, Vol. 4312, No. 10, San Jose, CA, Jan. 2001.
- [67] Y. Wu and J. Li, "Compression of concentric mosaic with rebinning of slits (ROSS)", *The First IEEE Pacific-Rim Conference on Multimedia*, Sydney, Australia, Dec. 13-15, 2000.
- [68] J. Li and H. Sun, "A virtual media (Vmedia) JPEG 2000 interactive image browser", *ACM Multimedia 2000 (demo)*, Los Angeles, CA, Oct. 2000, pp.501-502.
- [69] Y. Wu, C. Zhang, J. Li and J. Xu, "Smart rebinning for compression of concentric mosaics", *ACM Multimedia 2000 (oral presentation)*, Los Angeles, CA, Oct. 2000, pp.201-209. (9 pages, acceptance rate: 17%)
- [70] J. Li, H. Shum and Y. Zhang, "On the compression of image based rendering scene", *IEEE International Conference on Image Processing (ICIP 2000)*, #3307, Vancouver, BC, Sept. 2000.
- [71] W. Zeng, S. Lei and J. Li, "An efficient color re-indexing scheme for palette-based compression", *IEEE International Conference on Image Processing (ICIP 2000)*, #1321, Vancouver, BC, Sept. 2000.
- [72] Y. Wu, L. Luo, J. Li and Y. Zhang, "Rendering of 3D wavelet compressed concentric mosaic scenery with progressive inverse wavelet synthesis (PIWS)", *SPIE Visual Communication and Image Processing (VCIP 2000)*, Vol. 4067, No. 4, pp.31-42, Perth, Australia, Jun. 2000.
- [73] C. Zhang and J. Li, "Compression and rendering of concentric mosaic scenery with reference block codec (RBC)", *SPIE Visual Communication and Image Processing (VCIP 2000)*, Vol. 4067, No. 5, pp. 43-54, Perth, Australia, Jun. 2000.
- [74] G. Xing, J. Li, S. Li and Y. Zhang, "Arbitrarily shaped video object coding by wavelet", *IEEE International Symposium for Circuit and Systems (ISCAS 2000)*, Geneva, Switzerland, May. 2000.
- [75] H. Wang and J. Li, "Octmesh – interactive mesh browsing over the internet", *IEEE information theory: coding and communication (ITCC 2000)*, pp. 104-108, Las Vegas, NV, Mar. 2000.
- [76] C. Zhang and J. Li, "Compression of Lumigraph with multiple reference frame (MRF) prediction and just-in-time rendering", *IEEE Data Compression Conference (DCC'2000)*, pp. 253-262, Snowbird, Utah, Mar. 2000.
- [77] L. Luo, Y. Wu, J. Li and Y. Zhang, "Compression of concentric mosaic

- scenery with alignment and 3D wavelet transform”, *SPIE: Image and Video Communication and Processing*, Vol. 3974, No. 10, pp. 89-100, San Jose CA, Jan. 2000.
- [78] S. Daly, W. Zeng, J. Li and S. Lei, “Visual masking in wavelet compression for JPEG 2000”, *SPIE: Image and Video Communication and Processing*, Vol. 3974, No. 10, pp. 89-100, San Jose CA, Jan. 2000.
 - [79] J. Li, “Visual progressive coding”, *SPIE: Visual Communication and Image Processing*, Volume 3653, No. 116, San Jose, CA, Jan. 1999.
 - [80] W. Zeng, J. Li and S. Lei, “Adaptive wavelet transform with spatially varying filters for scalable image coding”, *1998 IEEE International Conference on Image Processing*, volume 1, pp. 112-116, Chicago, IL, Oct. 1998.
 - [81] J. Li and S. Lei, “Arbitrary shape wavelet transform with phase alignment”, *1998 IEEE International Conference on Image Processing*, volume 3, pp. 683-687, Chicago, IL, Oct. 1998.
 - [82] J. Li and S. Lei, “An embedded still image coder with rate-distortion optimization”, *SPIE: Visual Communication and Image Processing*, volume 3309, pp. 36-47, San Jose, CA, Jan. 1998.
 - [83] J. Li and J. Kuo, “Coding artifact removal with multiscale post-processing”, *1997 IEEE International Conference on Image Processing*, volume 1, pp. 45-48, Santa Barbara, CA, Oct. 1997.
 - [84] J. Li and S. Lei, “Rate-distortion optimized embedding”, *Picture Coding Symposium*, pp. 201-206, Berlin, Germany, Sep. 1997.
 - [85] J. Li, “Interscale predictive wavelet coding with Huber Markov random field”, *Picture Coding Symposium*, pp. 387-392, Berlin, Germany, Sep. 1997.
 - [86] Y. Lai, J. Kuo and J. Li, “New image compression artifact measure using wavelets”, *SPIE: Visual Communication and Image Processing*, volume 3204, pp. 897-908, San Jose, Feb. 1997.
 - [87] J. Li, and J. Kuo, “Hybrid wavelet-fractal image compression based on a rate-distortion criterion”, *SPIE: Visual Communication and Image Processing*, volume 3204, pp. 1014-1025, San Jose, Feb. 1997.
 - [88] J. Li, J. Kuo and P. Cheng, “Embedded wavelet packet image coder with fast rate-distortion optimized decomposition”, *SPIE: Visual Communication and Image Processing*, volume 3204, pp. 1077-1088, San Jose, Feb. 1997.
 - [89] P. Cheng, J. Li, and J. Kuo, “Rate-distortion optimized bit rate control scheme for a wavelet video coder”, *SPIE: Visual Communication and Image Processing*, volume 3204, pp.105-116, San Jose, Feb. 1997.
 - [90] J. Li, J. Li and J. Kuo, “Progressive compression of 3D graphic model”, *1997 IEEE International Conference on Multimedia Computing and Systems*, pp.135-141, 1997.
 - [91] Y. Lai, J. Li, and J. Kuo, “A wavelet approach to compressed image quality measurement”, *30th Annual Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, Nov. 3-6, pp.938-942, 1996.
 - [92] J. Li, J. Li, and J. Kuo, “An embedded DCT approach to progressive image compression,” *IEEE International Conference on Image Processing*, pp. I:81--84, Lausanne, Switzerland, September 1996.
 - [93] J. Li and J. Kuo, “Fractal wavelet coding using a rate-distortion constraint,” *IEEE International Conference on Image Processing*, pp. II:201--205, Lausanne, Switzerland, September 1996.
 - [94] J. Li, J. Li, and J. Kuo, “Embedded DCT still image compression,” *Signal and Information Display*, San Diego, CA, May 1996.
 - [95] P. Cheng, J. Li, and J. Kuo, “Video coding using embedded wavelet packet transform and motion compensation,” *SPIE: Visual Information Processing V*,

- Orlando, FL, Apr. 9, 1996.
- [96] K. Liang, J. Li, and J. Kuo, "Image compression with embedded multiwavelet coding," *SPIE: Wavelet Application III*, volume 2762, pp. 165--176, Orlando, FL, Apr. 9 1996.
 - [97] J. Li and J. Kuo, "Automatic target shape recognition via deformable wavelet templates," *SPIE: Automatic Object Recognition VI*, volume 2756, pp. 2--13, Orlando, FL, Apr. 9 1996.
 - [98] Y. Lai, J. Li, and J. Kuo, "Image enhancement for low-bitrate JPEG and MPEG coding via postprocessing," *SPIE: Visual Communication and Image Processing*, volume 2727, pp. 1484--1494, Orlando, FL, March 1996.
 - [99] J. Li and S. Kim and J. Kuo, "Focus of attention (FOA) identification from compressed video for automatic target recognition(ATR)," *1995 IEEE International Conference on Image Processing*, pp. III:508--511, Washington, DC, Nov. 1995.
 - [100] P. Cheng, J. Li, and J. Kuo, "Multiscale video compression using wavelet transform and motion compensation," *1995 IEEE International Conference on Image Processing*, pp. I:606--609, Washington, DC, Nov. 1995.
 - [101] Y. Lai, J. Li, and J. Kuo, "Removal of blocking artifacts of DCT transform by classified space-frequency filtering," *29th Annual Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 1995.
 - [102] J. Li, P. Cheng, and J. Kuo, "An embedded wavelet packet transform technique for texture compression," *SPIE: Wavelet Applications in Signal and Image Processing II*, volume 2569, pp. 602--613, San Diego, CA, Jul. 1995.
 - [103] J. Li, P. Cheng, and J. Kuo, "On the improvements of embedded zerotree wavelet (EZW) coding," *SPIE: Visual Communication and Image Processing*, volume 2501, pp. 1490--1501, Taipei, Taiwan, May 1995.
 - [104] J. Li and J. Kuo, "Fingerprint compression using embedded wavelet packet transform," *Rockwell conference on signal processing*, Thousand Oak, CA, Apr. 1995.
 - [105] J. Li, P. Cheng, and J. Kuo, "A wavelet transform approach to video compression," *SPIE: Wavelet Applications II*, volume 2491, pp. 1107--1118, Orlando, FL, Apr. 17-21 1995.
 - [106] J. Li, X. Lin, and Y. Wu, "Boundary-control point based motion representation scheme with its application in video coding," *SPIE: Visual Communication and Image Processing*, volume 2304, pp. 1838--1849, Chicago, IL, Sep. 25-28, 1994.
 - [107] X. Wang, J. Li and G. Wu, "Analysis of fractal image compression" in Chinese, *The 5th SPS national conference proceedings*, Wuhan, China, 1994.
 - [108] J. Li, X. Lin, and Y. Wu, "Multiresolution tree architecture with its application in video sequence coding," *SPIE: Visual Communication and Image Processing*, volume 2094, pp. 730--741, Cambridge, MA, Nov. 8-11, 1993.
 - [109] J. Li, X. Lin, and Y. Wu, "Color image sequence coding with variable block size motion compensation," *IEEE Region Ten International Conference on 'Computer Communications, Control and Power Engineering'*, pp. 974--977, Beijing, China, Oct. 1993.

Courses/
Tutorials/
Keynote

- [1] J. Li, "Image compression: mechanics of JPEG 2000" in *MSRI advanced signal processing*, Univ. of California – Berkeley, Berkeley, CA, Jun. 2001.
- [2] J. Li, "State-of-the art image compression techniques" in *Advanced graduate courses series*, Tsinghua Univ, Beijing, China, Sept., 1999.

- [3] J. Li, "Peer-to-peer multimedia applications" or "Locality aware P2P delivery: the way to scale Internet video", tutorial given at ICME'2006, ACM MM'2006, ICASSP'2007, ICC'2008, ICME'2008, ICME'2009, ICC'2010, GLOBECOM'2010.
- [4] J. Li, "Towards glitch free VoIP and video conferencing", Tutorial given at CCNC'2010.
- [5] Keynote Talk, "RemoteFX for WAN: A Full Fidelity Remoting Experience in Windows 8", IEEE Workshop on Quality of Experience for Multimedia Communications - QoEMC2012 (Los Angeles, CA)
- [6] C. Huang and J. Li, "Erasure coding for cloud communication and storage", ICC 2014 Tutorial, Jun. 2014 (Sydney, Australia)

**Presentations at
Standard
Conferences**

- [1] C. Zhang and J. Li, "Verification of PKU's integer reversible color transform", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1512, Maui, Hawaii, Dec. 8, 1999.
- [2] J. Li, "Chinese NB comment on IPR issue of JPEG2000 standard", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1514, Maui, Hawaii, Dec. 8, 1999.
- [3] J. Li, "Vfile and JPEG 2000 Image browsing (presentation)", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1512, Maui, Hawaii, Dec. 8, 1999.
- [4] J. Li, H. Sun, H. Li, Q. Zhang and X. Ling, "A virtual file media access mechanism for JPEG2000 images browsing", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1473, Maui, Hawaii, Dec. 8, 1999.
- [5] C. Zhang and J. Li, "Verification of PKU's integer reversible color transform", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1512, Maui, Hawaii, Dec. 8, 1999.
- [6] J. Li, "Chinese national body comment on intellectual property issue of JPEG 2000", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1514, Maui, Hawaii, Dec. 8, 1999.
- [7] J. Li, "Vfile – a virtual file media access mechanism (Presentation)", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1N1515, Maui, Hawaii, Dec. 8, 1999.
- [8] J. Li and S. Lei, "Report of arbitrary reordering of bitplanes for scalable/progressive core experiment", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1/N846, Copenhagen, Denmark, Jul. 6-10, 1998.
- [9] J. Li and S. Lei, "Report of visual progressive coding for the visual core experiment", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1/N847, Copenhagen, Denmark, Jul. 6-10, 1998.
- [10] J. Li, "Test report - color SPIHT coding for color core experiment", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1/N901, Copenhagen, Denmark, Jul. 6-10, 1998.
- [11] J. Li and S. Lei, "The rate-distortion optimized embedding for the scalable coding/progressive core experiment", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1/N757, Geneva, Switzerland, Mar. 23-27, 1998.
- [12] J. Li, " Visual Progressive Coding", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1/N758, Geneva, Switzerland, Mar. 23-27, 1998.
- [13] J. Li, W. Zeng and S. Lei, "The complete JPEG 2000 contribution phase questionnaire", *International Standard Organization*, ISO/IEC JTC1/SC29/WG1/N622, Sydney, Australia, Nov. 10-14, 1997.
- [14] J. Li, W. Zeng and S. Lei, "Sharp rate-distortion optimized embedded wavelet coding -- an algorithm proposal for JPEG 2000", *International*

- Standard Organization*, ISO/IEC JTC1/SC29/WG1/N621, Sydney, Australia, Nov. 10-14, 1997.
- [15] J. Li and S. Lei, "Arbitrary shape wavelet transform with phase alignment", *International Standard Organization*, ISO/IEC JTC1/SC29/WG11/M2381, Stockholm, Sweden, Jul. 21-25, 1997.
- [16] J. Li and S. Lei, "Proposal of core experiment Z2: spatial and quality scalability", *International Standard Organization*, ISO/IEC JTC1/SC29/WG11/M2037, Bristol, UK, Apr. 5-11, 1997.
- [17] J. Li and S. Lei, "Improvements of core experiment Z1: efficient coding of textures", *International Standard Organization*, ISO/IEC JTC1/SC29/WG11/M2036, Bristol, UK, Apr. 5-11, 1997.
- [18] J. Li and S. Lei, "Improvements of core experiment T1: wavelet coding of I pictures", *International Standard Organization*, ISO/IEC JTC1/SC29/WG11/M2035, Bristol, UK, Apr. 5-11, 1997.