

XIANG-SUN ZHANG

Full Research Professor

Academy of Mathematics and Systems Sciences (AMSS)
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BRIEF VITAE

1. Family Name: Zhang
2. Given Name: Xiang-Sun
3. Citizenship: People's Republic of China
4. Birth Data and Place: May 13, 1943, Shanghai, China
5. Sex: male
6. Education and Affiliation:
 - 1965
Graduated from Department of Applied Mathematics, Chinese University of Science and Technology
 - 1965-1978
Research Assistant, Research Associate, Institute of Mathematics, Chinese Academy of Sciences, Beijing, China
 - 1979-1981
Research Associate, Institute of Applied Mathematics, Chinese Academy of Sciences, Beijing, China
 - 1981-1983
Visiting fellow, Department of Computer Science, University of Minnesota, Minnesota, U.S.A.
 - 1983-

Research Associate Professor, Full Research Professor, Institute of Applied Mathematics, Chinese Academy of Sciences (CAS), Beijing, China

1992-1998

Director, Institute of Applied Mathematics, CAS

1999-2003,2

Executive Vice President, the Academy of Mathematics and System Sciences (AMSS), CAS.

2002-

Director of the Center of Bioinformatics, AMSS

RESEARCH, TEACHING AND CONSULTING INTERESTS

Bioinformatics

Protein structure and function prediction
System biology

Optimization Theory and Application:

Nonlinear Programming,
Parametric Programming,
Global Convergence Algorithms,
Linear Programming and Combinatorics

Complex Networks

Mathematical analysis of complex networks
Complex network application in systems biology

Artificial Neural Network(ANN):

Mathematical analysis of ANN,
ANN solving optimization problems

Management Information System (MIS) Theory and Application:

MIS Design Methodology,
MIS Planning
E-Government Strategic Planning

AWARDS/HONORS

- [1] The Honorary President of the Operations Research Society of China.
- [2] First Prize of the "OR in Development", awarded by the International Federation of Operations Research Societies (IFORS) at the 14th International Conference at Vancouver, Canada, 1996.
- [3] Third Prize of The "Science and Technology development Award" of Chinese Academy of Sciences, 1996.
- [4] Second Prize of The "Science and Technology development Award" of Chinese Academy of Sciences, 1994.
- [5] Third Prize of The "National Natural Science Award" , 1988.
- [6] Second Prize of The "Science and Technology development Award" of Chinese Academy of Sciences, 1987.
- [7] First Prize of The "Science and Technology Achievement" of Chinese Academy of Sciences, 1981.

PROFESSIONAL EXPERIENCES

<u>Name</u>	<u>Position</u>
Operations Research Society of China (ORSC)	President, 1996-2004 Honorary President, 2004-
APORS (Association of Asia-Pacific Operational Research Societies)	Representative of ORSC 1996–2004
Chinese Society of Industrial and Applied Mathematics	Vice President, 1996-2004
Systems Science Society of China	Council member, 1996-2003
Operations Research and Management Science (in Chinese)	Chief Editor, 2010–
Journal of Global Optimization	Associate Editor
Systems Science and Mathematical Sciences	Standing Member of the Editorial Board, –2009
Bioinformatics Research Center, AMSS	Director, 2002-
The Degree Granting Committee of CAS	Member, 2000-2003
Key Laboratory of Management, Decision and Information System, CAS	Chairman of the Academic Committee, 2006-
Fuzzy Optimization and Decision Making	Associate Editor
People’s University of China	Concurrent Professor
International Federation of Operations Research Societies (IFORS)	Vice President, 2010-2013

INTERNATIONAL CONFERENCE ORGANIZING

- [2010-1] Symposium Co-Chairman, The Ninth International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'10), Chengdu-Jiuzgaigou, China, 19-23 August, 2010
- [2009-1] Symposium Co-Chairman, the Eighth International Symposium of OR and Application, Zhangjiajie, China, 20-22, Sept., 2009.
- [2009-2] Symposium Co-Chairman, the Third International Symposium on Optimization and Systems Biology, Zhangjiajie, China, 20-22, Sept., 2009.
- [2008-1] Symposium Co-Chairman, the Seventh International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'08), Lijiang, Yunnan, 31, October - 3 November, 2008, China.
- [2008-2] Symposium Co-Chairman, the Second International Symposium on Optimization and Systems Biology (OSB'08), Lijiang, Yunnan, 31, October - 3 November, 2008, China.
- [2007] Symposium Co-Chairman, The First International Symposium on Optimization and Systems Biology (OSB'07), Beijing, 8-10 August, 2007, China.
- [2006] Symposium Co-Chairman, the Sixth International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'06), Urumqi, Xinjiang, 8-12 August, 2006, China.
- [2005] Symposium Co-Chairman, the Fifth International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'05), Lhasa-Nyingchi, Tibet, China, 9-13 August, 2005
- [2002-1] Symposium Chairman, the Fourth International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'02), 1-6 June, 2002, Yichang-Chongqing, China.
- [2002-2] Vice-Chairman of the Programming Committee, Game Theory and Applications satellite Conference, International Congress of Mathematicians, 14-17, August, 2002, Qingdao, China.
- [2002-3] Co-Chair of the Steering Committee of Sino-Japan Optimization Meeting, 25-27, September, 2002, Kyoto, Japan.
- [1999] Chairman of Local Organizing Committee, the Fifteenth Conference of International Federation of Operations Research (IFORS'99), 16-21 August, 1999, Beijing, China.
- [1998] Symposium Chairman, the Third International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'98), 20-22 August, 1998, Kunming, China.
- [1996] Symposium Chairman, the Second International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'96), 11-14 December, 1996, Guilin, China.
- [1995] Symposium Chairman, The First International Symposium on Operations

- Research with Applications in Engineering, Technology, and Management (ISORA'95), 19-22 August, 1995, Beijing, China.
- [1994] Symposium Chairman, The Fifth Annual International Symposium on Algorithms and Computation, (ISAAC'94), 25-27, August, 1994, Beijing, China.
- [1991] Organizing Committee Chairman, The Second Conference of the Association of Asia-Pacific Operational Research Societies within IFORS, (APORS'91), Aug. 1991, Beijing, China.

INVITED PLENARY TALK

- [1] The approximation capability of the feedforward neural network and a class of generalized fourier network, *The Third National Conference of Chinese SIAM*, Xian, 1994.
- [2] Neural network for solving mathematical programming, *International Conference on Optimization and Numerical Algebra*, Nanjing, September 27-30, 1999.
- [3] A new evaluation and forecasting method: the inverse DEA formulation, *International Workshop on Optimization with High Technology Applications*, Hong Kong, October 23-25, 2000.
- [4] The inverse DEA model: A prediction tool for not-for-profit organizations, *The 34th Workshop on Optimization and Control with Applications*, International School of Mathematics "G.Stampacchia", Erice, Italy, July 9-17, 2001.
- [5] The history and recent development of OR in China, a keynote speech at the *2003 National Meeting of the OR Society of Japan*, Fukuoka, Japan, September, 10, 2003.
- [6] Optimization and Systems Biology, *The Eighth National Conference of OR Society of China*, Nanjing, October, 18, 2008 .
- [7] Bioinformatics, recent problems and results, *Seventh International Symposium on Operations Research with Applications in Engineering, Technology, and Management (ISORA'08)*, Lijiang, Yunnan, 31, October - 3 November, 2008, China.
- [8] Community structure analysis in complex networks, *National Conference on Complex Networks*, Shuzhou, China, 17 Oct., 2010
- [9] New Trends of OR Application *APORS2010*, Penang, Malaysia, 6 December, 2010

RESEARCH PAPERS

Bioinformatics/Systems Biology

REFEREED JOURNAL ARTICLES

- [2011-1] Ji-Guang Wang, Qiang Huang, Zhi-Ping Liu, Yong Wang, Ling-Yun Wu, Luonan Chen, and Xiang-Sun Zhang, NOA: a novel Network Ontology Analysis method, *Nucleic Acids Research*, doi: 10.1093/nar/gkr251, 2011
- [2011-2] Zhenping Li, Rui-Sheng Wang, Xiang-Sun Zhang, Two-stage flux balance analysis of metabolic networks for drug target identification, *BMC Systems Biology*, 5(Suppl 1):S11, 2011
- [2011-3] Zhi-Ping Liu, Yong Wang, Xiang-Sun Zhang, Weiming Xia and Luonan Chen, Detecting and analyzing differentially activated pathways in brain regions of Alzheimer's disease patients, *Molecular Biosystems*, 7(5):1441-1452, 2011
- [2011-4] Yong Wang, Xiang-Sun Zhang, and Luonan Chen, Computational systems biology: integration of sequence, structure, network, and dynamics, *BMC Systems Biology*, 5(Suppl 1):S1, 2011
- [2011-5] Xianwen Ren, Yong-Cui Wang, Yong Wang, Xiang-Sun Zhang and Nai-Yang Deng, Improving accuracy of protein-protein interaction prediction by considering the converse problem for sequence representation, *MBC Bioinformatics*, 12:409, 2011
- [2010-1] Zhong-Yuan Zhang, Tao Li, Chris Ding, Xian-Wen Ren, and Xiang-Sun Zhang, Binary matrix factorization for analyzing gene expression data, *Data Mining and Knowledge Discovery*, 20(1), 28-52, 2010
- [2010-2] Lin Wang, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, Luonan Chen, SANA: an algorithm for sequential and non-sequential protein structure alignment, *Amino Acids*, Feb. 2010
- [2010-3] Yu-Qing Qiu, Shihua Zhang, Xiang-Sun Zhang and Luonan Chen, Detecting disease associated modules and prioritizing active genes based on high throughput data, *BMC Bioinformatics*, 11:26, doi:10.1186/1471-2105-11-26, 2010
- [2010-4] Yong Wang, Eric Franzosa, Xiang-Sun Zhang, Yu Xia, Evolution in yeast transcription factor subnetworks, *Nucleic Acids Research*, 38(18): 5959C5969, 2010
- [2010-5] Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang and Luonan Chen, Prediction of protein-RNA binding sites by a random forest method with combined features, *Bioinformatics*, Vol. 26, No. 13, 1616-1622, 2010
- [2010-6] Xianwen Ren, Xiaobo Zhou, Ling-Yun Wu, and Xiang-Sun Zhang, An information-flow-based model with dissipation, saturation and direction for active pathway inference, *BMC Systems Biology*, 4:72, 2010

- [2010-7] Zhi-Ping Liu, Yong Wang, Xiang-Sun Zhang and Luonan Chen, Identifying dysfunctional crosstalk of pathways in various regions of Alzheimer’s disease brains, *BMC Systems Biology*, 4(Suppl 2):S11, 2010
- [2010-8] Shihua Zhang, Xue-Mei Ning, Chris Ding, Xiang-Sun Zhang, Determining modular organization of protein interaction networks by maximizing modularity density, *BMC Systems Biology*, 4(S2):S10, 2010
- [2010-9] Zhenping Li, Rui-Sheng Wang, Xiang-Sun Zhang, and Luonan Chen, Self-organizing map of complex networks for community detection, *Journal of Systems Science and Complexity*, 23(5), 931-941, 2010
- [2010-10] Xianwen Ren, Xiang-Sun Zhang, A linear programming model based on network flow for pathway inference, *Journal of Systems Science and Complexity*, 23(5), 971-977, 2010
- [2010-11] Junhua Zhang, Yuqing Qiu, Xiang-Sun Zhang, Detecting community structure: From parsimony to weighted parsimony, *Journal of Systems Science and Complexity*, 23(5), 1024-1036, 2010
- [2009-1] Rui-Sheng Wang, Guangxu Jin, Xiang-Sun Zhang and Luonan Chen, Modeling post-transcriptional regulation activity of small non-coding RNAs in Escherichia coli, IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2008, Philadelphia, PA, USA. *BMC Bioinformatics*, 10 (Suppl 4), 2009
- [2009-2] Ling-Yun Wu, Zhenping Li, Rui-Sheng Wang, Xiang-Sun Zhang, Luonan Chen. Self-organizing map approaches for the haplotype assembly problem, *Mathematics and Computers in Simulation*, 79(10), 3026-3037, 2009
- [2009-3] Yong Wang, Ling-Yun Wu, Ji-Hong Zhang, Zhong-Wei Zhan, Xiang-Sun Zhang, and Luonan Chen, Evaluating protein similarity from coarse structures, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Vol. 6, No. 4, pp. 583-593, 2009
- [2009-4] Yong Wang, Xiang-Sun Zhang, Yu Xia, Predicting eukaryotic transcriptional cooperativity by Bayesian network integration of genome-wide data, *Nucleic Acids research*, Vol. 37, No. 18, pp. 5943-5958, 2009
- [2009-5] Yong Wang, Xiang-Sun Zhang, and Luonan Chen, A network biology study on circadian rhythm by integrating various omics data, *OMICS: A Journal of Integrative Biology*, Vol. 13, No. 4, 2009.
- [2009-6] Jiguang Wang, Shihua Zhang, Yong Wang, Luonan Chen, and Xiang-Sun Zhang, Disease-aging network reveals significant roles of aging genes in connecting genetic diseases, *PLoS Computational Biology*, 9(5), e1000521, 2009
- [2009-7] Shihua Zhang, Hong-Wei Liu, Xue-Mei Ning, Xiang-Sun Zhang. A hybrid graph-theoretic method for mining functional modules in large sparse protein interaction networks, *International Journal of Data Mining in Bioinformatics*, 3(1), 68-84, 2009
- [2009-8] Zhenping Li, Rui-Sheng Wang, Xiang-Sun Zhang and Luonan Chen. Detecting drug targets with minimum side effects in metabolic networks, *IET*

- Systems Biology*, 3(6), 523-533, 2009
- [2009-9] Yu-Qing Qiu, Shihua Zhang, Xiang-Sun Zhang and Luonan Chen, Identifying differentially expressed pathways via a mixed integer linear programming model, *IET Systems Biology*, 3(6), 475-486, 2009
- [2009-10] Guangxu Jin, Xiaobo Zhou, Kemin Cui, Xiang-Sun Zhang, Luonan Chen, and Steve T.C. Wong, Cross-platform method for identifying candidate network biomarkers for prostate cancer, *IET Systems Biology*, 3(6), 505-512, 2009
- [2008-1] Shihua Zhang, Xiang-Sun Zhang and Luonan Chen, Biomolecular network querying: a promising approach in systems biology, *BMC Systems Biology* 2008, 2:5 (18 Jan 2008)
- [2008-2] Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, Luonan Chen, Bridging protein local structures and protein functions, *Amino Acids*, 2008, DOI: 10.1007/s00726-008-0088-8
- [2008-3] Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Luonan Chen, Xiang-Sun Zhang, Protein Surface cavities clustering based on community structure feature of pocket similarity network, *International Journal of Bioinformatics Research and Applications*, 2008, In press, (PubMed)
- [2008-4] Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, Luonan Chen, Analysis of the protein surface patterns by pocket similarity network, *Protein and Peptide Letters*, 15(5), pp.448-455, 2008
- [2008-5] Guangxu Jin, Xiaobo Zhou, Honghui Wang, Hong Zhao, Kemi Cui, Xiang-Sun Zhang, Luonan Chen, Stanley L. Hazen, King Li, and Stephen T. C. Wong, The knowledge-integrated network biomarkers discovery for major adverse cardiac events, *J. of Proteome Research*, 7: 4013-4021, 2008
- [2008-6] Jihong Zhang, Lingyun Wu, Jian Chen and Xiang-Sun Zhang, A Fast haplotype inference method for large population genotype data, *Computational Statistics and Data Analysis*, Vol.52(11): pp.4891-4902, 2008
- [2008-7] Lin Wang, Yuqing Qiu, Jiguang Wang and Xiangsun Zhang, Recognition of structure similarities in proteins, *Journal of Systems Science and Complexity*, Vol. 21, No. 4, pp.665-675, 2008
- [2007-1] Yong Wang, Ling-Yun Wu, Luonan Chen and Xiang-Sun Zhang, Supervised classification of protein structures based on convex hull representation, *International Journal of Bioinformatics Research and Applications*, Vol. 3, No. 2, 2007.
- [2007-2] Ji-Hong Zhang, Ling-Yun Wu, Yu-Ying Zhao, Xiang-Sun Zhang, An optimization approach to the reconstruction of positional DNA sequencing by hybridization with errors, *European J. of Operational research*, 182, pp.413-427, 2007
- [2007-3] Shihua Zhang, Guangxu Jin, Xiang-Sun Zhang, Luonan Chen, Discovering functions and revealing mechanisms at molecular level from biological networks, *Proteomics*, 7(16), 2856-2869, 2007

- [2007-4] Zhenping Li, Shihua Zhang, Yong Wang, Xiang-Sun Zhang, and Luonan Chen, Alignment of molecular networks by integer quadratic programming, *Bioinformatics*, Vol. 23, No. 13, 1631-1639, 2007
- [2007-5] Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Luonan Chen, Xiang-Sun Zhang: Predicting Gene Ontology Functions from Protein's Regional Surface Structures, *BMC Bioinformatics*, 2007, Vol.8, 475
- [2007-6] Rui-Sheng Wang, Wang Yong, Xiang-Sun Zhang, Luonan Chen, Inferring transcriptional regulatory networks from high-throughput data, *Bioinformatics*, 23, pp.3056-3064, 2007
- [2007-7] Rui-Sheng Wang, Wang Yong, Ling-Yun Wu, Xiang-Sun Zhang, Luonan Chen, Analysis of multi-domain cooperation for predicting of protein-protein interactions, *BMC Bioinformatics*, 8:391, 2007
- [2007-8] Rui-Sheng Wang, Xiang-Sun Zhang, Luonan Chen. Inferring transcriptional interactions and regulator activities from experimental data, *Molecules and Cells*, 24(3), pp. 307-315, 2007.
- [2007-9] G. Jin, S.Zhang, Z.S.Zhang, L.Chen, Hubs with network motifs organize modularity dynamically in the protein-protein interaction network of yeast. *PLoS ONE* 2: e1207, 2007
- [2006-1] Xiang-Sun Zhang, Rui-Sheng Wang, Ling-Yun Wu, Luo-Nan Chen, Models and algorithms for the haplotyping problem, *Current Bioinformatics*, vol.1, no.1, pp.105-114, 2006
- [2006-2] Yong Wang, Ling-Yun Wu, Xiang-Sun Zhang and Luonan Chen, Exploring the Classification of Protein Structures on Geometric Patterns by Neural Networks, *International Journal of Computational Intelligence Research (IJ-CIR)*, vol.2, no.1, pp.105-109, 2006
- [2006-3] Shi-hua Zhang, Xiang-Sun Zhang, Visualization of conformational space based on $C\alpha - C\alpha$ distance, *Chinese J. of Bioinformatics* (in Chinese), vol.4, no.4, pp.153-156, 2006
- [2006-4] Luonan Chen, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, Inferring Protein Interactions from Experimental Data by Association Probabilistic Method, *Proteins: Structure, Function, and Bioinformatics*, vol.62, pp.833-837, 2006
- [2006-5] Xiang-Sun Zhang, Rui-Sheng Wang, Ling-Yun Wu, Wei Zhang, Minimum conflict individual haplotyping from SNP fragments and related genotype, *Evolutionary Bioinformatics Online*, vol.2, pp.271-280, 2006
- [2006-6] Luonan Chen, Ling-Yun Wu, Yong Wang, Shihua Zhang, Xiang-Sun Zhang, Revealing divergent evolution, identifying circular permutations and detecting active-sites by protein structure comparison, *BMC Structural Biology*, 2006, 6:18
- [2006-7] Shihua Zhang, Xue-Mei Ning, Xiang-Sun Zhang, Identification of functional modules in PPI network by clique percolation clustering, *Computational Biology and Chemistry*, vol.30, pp.445-451, 2006
- [2006-8] Yong Wang, Trupti Joshi, Xiang-Sun Zhang, Dong Xu, Luonan Chen, Infer-

- ring gene regulatory networks from multiple microarray datasets, *Bioinformatics*, vol.22, no.19, pp.2413-2420, 2006
- [2006-9] Zhen-Ping Li, Ling-Yun Wu, Yu-Ying Zhao and Xiang-Sun Zhang, A dynamic programming algorithm for the k-haplotyping problem, *Acta Mathematicae Applicatae Sinica*, Vol.22, No.3, pp.405-412, 2006.
- [2006-10] Rui-Sheng Wang, Ling-Yun Wu, Xiang-Sun Zhang and Luonan Chen. A Markov chain model for haplotype assembly by SNP fragments. *Genome Informatics*, Vol. 17, No. 2. 2006
- [2005-1] Rui-sheng Wang, Lingyun Wu, Zhenping Li, and Xiang-sun Zhang, Haplotype reconstruction from SNP fragments by minimum error correction, *Bioinformatics*, vol.21, no.10, pp.2456-2462, 2005.
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- [2005-4] Ji-hong Zhang, Ling-yun Wu and Xiang-sun Zhang, A reconstruction algorithm to DNA sequencing by hybridization with target DNA length error, *Acta Mathematicae Applicatae Sinica* vol.28, no.3, pp.385-395, 2005 (in Chinese).
- [2005-5] Yong Wang, Zhongwei Zhan, Lingyun Wu, and Xiangsun Zhang, An improved self-organizing map algorithm for protein folding and its realization, *System Science and Mathematics*, vol.25, no.4, 2005.
- [2005-6] Yuying Zhao, Lingyun Wu, Jihong Zhang, Ruisheng Wang, and Xiangsun Zhang, Haplotype assembly from aligned weighted SNP fragments, *Computational Biology and Chemistry*, vol.29, pp.281-287, 2005.
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- [2005-8] Luonan Chen, Ling-Yun Wu, Ruiqi Wang, Yong Wang, Shihua Zhang, Xiang-Sun Zhang, Comparison of protein structures by multi-objective optimization, *Genome Informatics*, vol.16, no.2, pp.114-124, 2005.
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- [2004-2] Zhenping Li, Yong Wang, Yuying Zhao and Xiang-Sun Zhang, Haplotype inference and mating graphs, *Applied Mathematics, A Journal of Chinese Universities* (Series A), vol.19, pp.567-576, 2004.
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- [2002] Xiangsun Zhang, Jihong Zhang and Lingyun Wu, A reconstruction algorithm

to solve positional sequencing by hybridization, *J. of Systems Science and Mathematical Sciences*, vol.22, no.3, pp.258-269, 2002 (in Chinese).

PROCEEDINGS ARTICLES

- [2011-1] Yong-Cui Wang, Xian-Wen Ren, Chun-Hua Zhang, Nai-Yang Deng, Xiang-Sun Zhang, Evaluating the Denoising Techniques in Protein-Protein Interaction Prediction, *IEEE International Conference on Systems Biology (ISB)*, pp. 78-83, 2011
- [2011-2] Xianwen Ren, Yong Wang, Luonan Chen, Xiang-Sun Zhang, A Linear Programming Model for Identifying Non-Redundant Biomarkers Based on Gene Expression Profiles, *IEEE International Conference on Systems Biology (ISB)*, pp. 249-254, 2011
- [2011-3] Yong Wang, Qiao-Feng Wu, Chen Chen, Xian-Zhong Yan, Shu-Guang Yu, Xiang-Sun Zhang, Fan-Rong Liang, Identifying Biomarkers for Acupuncture Treatment via an Optimization Model, *IEEE International Conference on Systems Biology (ISB)*, pp. 319-326, 2011
- [2011-4] Qiang Huang, Ling-Yun Wu, Ji-Bin Qu, Xiang-Sun Zhang, Analyzing Time-Course Gene Expression Data Using Profile-State Hidden Markov Model, *IEEE International Conference on Systems Biology (ISB)*, pp. 351-355, 2011
- [2011-5] Chen Chen, Jun-Fei Zhao, Qiang Huang, Rui-Sheng Wang, Xiang-Sun Zhang, Inferring Domain-Domain Interactions Using an Extended Parsimony Model, *IEEE International Conference on Systems Biology (ISB)*, pp. 385-389, 2011
- [2011-6] Ji-Bin Qu, Xiang-Sun Zhang, Ling-Yun Wu, Yong Wang, Luonan Chen, Detecting Coherent Local Patterns from Time Series Gene Expression Data by a Temporal Biclustering Method, *IEEE International Conference on Systems Biology (ISB)*, pp. 399-404, 2011
- [2010-1] Ruisheng Wang, Zhenping Li, Xiang-Sun Zhang, Luonan Chen, Optimization and Control of Metabolic Networks, *Proceedings of The 29th Chinese Control Conference (CCC)*, pp. 6251-6255, Beijing, 2010
- [2010-2] Zhi-Ping Liu, Xiang-Sun Zhang, Effects of Multiple Probesets in Affymetrix GeneChips on Identifying Differentially Expressed Genes in iPS Cells, *The Fourth International Conference on Computational Systems Biology (ISB2010)*, pp. 187-195, 2010
- [2010-3] Zhenping Li, Rui-Sheng Wang, Xiang-Sun Zhang, Drug Target Identification Based on Flux Balance Analysis of Metabolic Networks, *The Fourth International Conference on Computational Systems Biology (ISB2010)*, pp. 331-338, 2010
- [2009-1] Zhi-Ping Liu, Yong Wang, Tieqiao Wen, Xiang-Sun Zhang, Weiming Xia, and Luonan Chen, Dynamically dysfunctional protein interactions in the

- development of Alzheimer's disease, *IEEE International Conference on Systems, Man, and Cybernetics*, 2009.
- [2009-2] Xianwen Ren, Xiang-Sun Zhang, A Novel Approach for Pathway Inference Based on Network Flow, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.11, pp.468-474, World Publishing Corporation, 2009.
- [2008-1] Zhenping Li, Rui-Sheng Wang, Xiang-Sun Zhang, Mass flow model and essentiality of enzymes in metabolic networks, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.9, pp.182-190, World Publishing Corporation, 2008.
- [2008-2] Junhua Zhang, Weihua Yue, Xiang-Sun Zhang, Multilocus analysis of case-control data to schizophrenia based on measures of information discrepancy, *Operations Research and Its Applications*, Lecture Notes in Operations Research, vol.8, pp.432-439, World Publishing Corporation, 2008
- [2007-1] Jinshan Li, Xiang-Sun Zhang, An optimization model for gene regulatory network reconstruction with known biological information, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.7, pp.35-44, World Publishing Corporation, 2007
- [2007-2] Yong Wang, Rui-Sheng Wang, Xiang-Sun Zhang and Luonan Chen, Establishing protein functional linkage in a systematic way, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.7, pp.75-88, World Publishing Corporation, 2007
- [2007-3] Guangxu Jin, Shihua Zhang, Xiang-Sun Zhang and Luonan Chen, New insights into network motif clusters from the views of cellular localizations and signal pathways, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.7, pp.100-109, World Publishing Corporation, 2007
- [2007-4] Zhi-Ping Liu, Ling-Yun Wu, Yong Wang, Xiang-Sun Zhang, Luonan Chen, An approach for clustering protein pockets into similar groups, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.7, pp.204-212, World Publishing Corporation, 2007
- [2007-5] Zhong-yuan Zhang, Xiang-Sun Zhang, Two improvements of NMF used for tumor clustering, *Optimization and System Biology*, Lecture Notes in Operations Research, vol.7, pp.242-249, World Publishing Corporation, 2007
- [2006-1] Shi-Hua Zhang, Xue-Mei Ning, Hong-Wei Liu, Xiang-Sun Zhang, Prediction of protein complexes based on protein interaction data and functional annotation data using kernel methods, *Computational Intelligence and Bioinformatics*, ICIC 2006, Part III, De-shuang Huang, et al. (eds.) pp.514-524, Lecture Notes in Bioinformatics 4115, Springer-Verlag, 2006.
- [2006-2] Yong Wang, Ling-Yun Wu, Xiang-Sun Zhang, and Luonan Chen, Automatic Classification of Protein Structures Based on Convex Hull Representation by Integrated Neural Network, *TAMC2006, LNCS3959*, J.-Y.Cai, S.B.Cooper, and A.Li (Eds), pp.505-514, 2006

- [2006-3] Yong Wang, Trupti Joshi, Dong Xu, Xiang-Sun Zhang and Luonan Chen, Supervised Inference of Gene Regulatory Networks by Linear Programming, *Computational Intelligence and Bioinformatics*, ICIC 2006, Part III, Deshuang Huang, et al. (eds.) pp.551-561, Lecture Notes in Bioinformatics 4115, Springer-Verlag, 2006.
- [2006-4] Zhenping Li, Yong Wang, Shihua Zhang, Xiang-sun Zhang, Luonan Chen, Alignment of protein interaction networks by integer quadratic programming, *IEEE Engineering in Medicine and Biology Society*, 2006
- [2006-5] Xiang-Sun Zhang, Rui-Sheng Wang, Lin-Yun Wu, Shi-Hua Zhang, Luonan Chen, Inferring Protein-Protein Interactions by Combinatorial Models, *IFMBE Proceedings*, vol.14, pp.181-184, World Conference on Medical Physics and Biomedical Engineering, Seoul, Korea, Springer-Verlag, 2006
- [2006-6] Yong Wang, Lin-Yun Wu, Xiang-Sun Zhang and Luonan Chen, Protein comparisons based on both structure and sequence data, *IFMBE Proceedings*, vol.14, pp.172-175, World Conference on Medical Physics and Biomedical Engineering, Seoul, Korea, Springer-Verlag, 2006
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Ph.D. program adviser, the Academy of Mathematics and Systems Science, CAS. 7 Master Degree students and 17 Ph.D students have involved in the program.

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Ph.D. program adviser, the People's University of China, 2 Ph.D students have involved in the program.

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Teaching Combinatorial Optimization (Algorithms and Complexity) at the Graduate School of Chinese University of Science and Technology.

1988.9-1989.12

Teaching MIS Theory and Design Methodology at the Beijing University of Science and Technology.

1984.9-1985.1

Teaching Nonlinear Programming at the Chinese University of Science and Technology.

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Teaching Stochastic Process and Queue Theory at the Beijing College of Iron and Steel.

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