

MINGON KANG

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PROFESSIONAL APPOINTMENTS

- Aug. 2015 - Present **Assistant Professor**
Texas A&M University-Commerce
Department of Computer Science & Information Systems
- Aug. 2014 – May. 2015 **Instructor**
University of Texas at Arlington
Department of Computer Science and Engineering

EDUCATION

- Aug. 2010 - Aug. 2015 **Ph.D. in Computer Science and Engineering**
University of Texas at Arlington, USA
Concentration: Machine Learning, Data Mining, Bioinformatics,
and Data Analytics
Advisor: Dr. Jean Gao
Dissertation: Integrative Computational Analysis for
Multimodal Genomic Data
- Jan.2009 - Aug. 2010 **M.S. in Computer Science and Engineering**
University of Texas at Arlington, USA
Concentration: Computational Biology, Numerical Optimization
Advisor: Dr. Jean Gao
Thesis: Mathematical Modeling for Phagocyte Transmigration
and Reverse Engineering
- Mar. 1998 - Feb. 2006 **B.S. in Computer Engineering**
Hanyang University, Korea
Thesis project: 3D Online Game: Battlebots

RESEARCH INTERESTS

Big Data Analytics, Data Science, Bioinformatics, and Health Informatics using Machine Learning, Data Mining, Pattern Recognition and Numerical Optimization

- **Big Data Analytics, Machine Learning, and Data Mining**

- Cross-Language Text Classification
- Causal Network Inference on Mergers and Acquisitions (M&A)
- Ranking Analysis of Mobile Application on Apple App Store
- Sentiment Analysis on Social Network Service (SNS)

- **Bioinformatics**

- Computational methodologies for Next Generation Sequencing: RNA-seq, Chip-seq, and Gro-seq for enhancer identification
- Genome Association study: Sparse learning, Multi-task learning, Multivariate methods
- Integrative methods dealing with the heterogeneous biological data (DNA sequence, copy number variations, DNA methylation, gene expression)
- Computational modeling of eQTL epistasis
- Protein Quantification using Tandem Mass Spectrometry
- Computational modeling and parameter estimation using numerical optimization

- **Health Informatics**

- Heartbeat classification for mobile-based Arrhythmia Recognition

RESEARCH COLLABORATIONS

- Big Data Analytics

- Management Information Systems Projects, Gee Moo Lee, Ph.D., Information Systems and Operations Management, University of Texas at Arlington
- Jean Gao, Ph.D., Department of Computer Science, University of Texas at Arlington
- DongChul Kim, Ph.D., Department of Computer Science, University of Texas at Rio Grande Valley

- Bioinformatics

- Next Generation Sequencing (NGS) in Neuroscience, Taekyung Kim, Ph.D.,

Department of Neuroscience, University of Texas Southwestern Medical Center

- Genomic Data Integration in Psychiatric disorders, Chunyu Liu, Ph.D., Department of Psychiatry, University of Illinois at Chicago

- Health Informatics

- Juyoung Park, Ph.D., Department of Computer Science, Hanyang University, Korea

PUBLICATIONS

Journal Papers (in reverse chronological order)

[J01] D. Kim, **M. Kang**, A. Biswas, C. Liu, and J. Gao, "Integrative approach for inference of gene regulatory networks using lasso-based random featuring and application to Psychiatric disorders," BMC Medical Genomics, Invited to a special issue in 2016

[J02] **M. Kang**, J. Park, D. Kim, A. Biswas, C. Liu, and J. Gao, "An Integrative Genomic Study for Multimodal Genomic Data Using Multi-Block Bipartite Graph," IEEE/ACM Transactions on Computational Biology and Bioinformatics (**IEEE TCBB**), Invited to a special issue in 2016

[J03] The HPN-DREAM consortium, "Empirical assessment of causal network inference through a community-based effort", **Nature Methods**, 2015, Accepted

[J04] J. Park, **M. Kang**, J. Gao, Y. Kim, and K. Kang, "Heartbeat Classification Using Beat Morphology Features for Mobile Arrhythmia Recognition", Journal of Medical Systems, Invited to a special issue in 2016

[J05] **M. Kang**, D. Kim, C. Liu, and J. Gao, "Multiblock Discriminant Analysis: A Novel Approach for Integrative Genomic Study", BioMed Research International, Volume 2015 (2015), Article ID 783592, 10 pages, <http://dx.doi.org/10.1155/2015/783592> (**Impact factor: 2.706**)

[J06] **M. Kang**, H. Chun, C. Ding, C. Zhang, C. Liu, and J. Gao, "eQTL epistasis: detecting epistatic effects and inferring hierarchical relationships of genes in biological pathways", **Bioinformatics**, 31(5):656-664, 2015, doi: 10.1093/bioinformatics/btu727 (**5-Yr impact factor: 6.968, Top #1 ranked journal in Bioinformatics**)

[J07] A. Biswas, **M. Kang**, D. Kim, J. Gao, "Inferring Disease Associations of the Long non-coding RNAs through Non-negative Matrix Factorization", Network Modeling Analysis in Health Informatics and Bioinformatics, 4(1), doi: 10.1007/s13721-015-0081-6, Springer

Journal Papers Under Review (in reverse chronological order)

[R01] Y. Kim, **M. Kang**, and J. Ryul, "Developing Domain Specific Lexicon for Sentiment Analysis Using Movie Word-Of-Mouth", IEEE Intelligent Systems, 2015

[R02] D. Kim, **M. Kang**, A. Biswas, C. Yang, X. Wang, and J. Gao, "Effects of low dose ionizing radiation in DNA damage-caused pathways inferred by reverse phase protein array and learning Bayesian networks", Journal of Bioinformatics and Computational Biology, 2015

[R03] **M. Kang**, J. Gao, and L. Tang, "Computational modeling of phagocyte transmigration during biomaterial-mediated foreign body responses", BMC Bioinformatics, 2015 – **Under Revision**

[R04] **M. Kang**, A. Biswas, D. Kim, and J. Gao, "Correlated Subspace Multi-View Learning for Cross-Language Text Classification", IEEE Transactions on Knowledge and Data Engineering (TKDE), 2015

[R05] **M. Kang**, D. Kim, T. Talamantes, L. Prokai, and J. Gao, "MaxLap: protein quantification strategy in label-free proteomics data based on spectral counting", Rapid Communications in Mass Spectrometry, 2014

[R06] **M. Kang**, J. Gao, and L. Tang, "Nonlinear RANSAC Parameter Optimization for Phagocyte Transmigration Modeling", IEEE/ACM Transactions on Computational Biology and Bioinformatics, 2014

Conference Proceedings *(in reverse chronological order)*

[C01] **M. Kang**, J. Park, D. Kim, A. Biswas, C. Liu, and J. Gao, "An Integrative Genomic Study for Multimodal Genomic Data Using Multi-Block Bipartite Graph," Proceedings of IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM 2015) (**regular paper, acceptance rate 19%, 68/346**), Washington D.C., USA, Nov. 9-12, 2015

[C02] D. Kim, **M. Kang**, A. Biswas, C. Liu, and J. Gao, "Integrative approach for inference of gene regulatory networks using lasso-based random featuring and application to Psychiatric disorders," Proceedings of IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM 2015) (**regular paper, acceptance rate 19%, 68/346**), Washington D.C., USA, Nov. 9-12, 2015

[C03] J. Park, **M. Kang**, Y. Kim, and K. Kang, "Heartbeat classification for detecting arrhythmia using normalized beat morphology features," in Proc. IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Washington D.C., US, Nov. 2015.

[C04] **M. Kang**, D. Kim, C. Liu, and J. Gao, "Multi-Block and Multi-Task Learning for Integrative Genomic Study," Proceedings of IEEE 14th International Conference on Bioinformatics and Bioengineering (IEEE BIBE 2014) (regular paper), Boca Raton, FL Nov. 10-12, 2014

[C05] D. Kim, **M. Kang**, C. Liu, and J. Gao, "Integration of DNA Methylation, Copy Number Variation, and Gene Expression for Gene Regulatory Network Inference and Application to Psychiatric Disorders," Proceedings of IEEE 14th International Conference on Bioinformatics and Bioengineering (IEEE BIBE 2014), Boca Raton, FL Nov. 10-12, 2014

[C06] **M. Kang**, S. Li, C. Liu, and J. Gao, "eQTL Epistasis: Detecting Complex Interaction Effects between Multiple Loci from eQTL Data," Proceedings of IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM 2013) (**regular paper acceptance rate 19.6%**), Shanghai, China, Dec. 18-21, 2013

[C07] **M. Kang**, S. Li, D. Kim, C. Liu, and J. Gao, "eQTL Mapping Study via Regularized Sparse Canonical Correlation Analysis," 12th International Conference on Machine Learning and Applications (IEEE ICMLA 2013) (**regular paper acceptance rate 27%**), Miami, FL, Dec. 4-7, 2013

[C08] **M. Kang**, C. Liu, and J. Gao, "Sparse Generalized Canonical Correlation Analysis for Biological Model Integration: A Genetics Study of Psychiatric Disorders", the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2013), Osaka, Japan, July 3-7, 2013

[C09] **M. Kang**, D. Kim, and J. Gao, "SF-RPQ: A novel statistical framework for reliable protein quantification in label-free quantitative proteomics", the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2013), Osaka, Japan, July 3-7, 2013

[C10] S. Li, **M. Kang**, J. Nyagilo, B. Zhang, X. Wu, D. Dave and J. Gao, "Continuous Wavelet Transform based Continuum Regression for Quantitative Analysis of Surface-enhanced Raman Spectra," 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2013), pp. 4486-4489, Osaka, Japan, July 3-7, 2013

[C11] **M. Kang**, D. Kim, and J. Gao, "A Novel Multivariate Quantification Strategy for Complex Mass Spectrometry Data," International Conference on Bioinformatics and Computational Biology (BICoB), pp. 257-262, Las Vegas, NV, March 12-14, 2012

[C12] **M. Kang**, J. Gao, and L. Tang, "Nonlinear RANSAC Optimization for Parameter Estimation with Applications to Phagocyte Transmigration," Proceedings of IEEE International Conference on Machine Learning and Applications (IEEE ICMLA), pp. 501-504, Honolulu, HI, Dec. 18-21, 2011

[C13] J. Choi, **M. Kang**, D. Engels, R. Elmasri, "Investigation of Impact Factors for Various Performances of Passive UHF RFID System," Proceedings of IEEE International Conference on RFID-Technology and Applications (IEEE RFID-TA), pp. 152-159, Barcelona, Spain, Sep. 15-16, 2011

[C14] **M. Kang**, J. Gao, and L. Tang, "Computational Modeling of Phagocyte Transmigration during Biomaterial-Mediated Foreign Body Responses," Proceedings of IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM), pp. 609-612, Hong Kong, Dec. 18-21, 2010

Posters

[P01] **M. Kang**, "eQTL epistasis and Gene pathway inference", 2014 Korean-American Biomedical Scientist Symposium, UT MD Anderson Cancer Center, Houston, TX, Nov. 1,

2014, **GenDepot Poster Award**

[P02] **M. Kang**, D. Kim, and J. Gao, "Statistical Validation of Protein Quantification in Label-Free Quantitative Proteomics," the 17th Annual International Conference on Research in Computational Molecular Biology (RECOMB), Beijing, China, Apr. 4-10 2013.

PROFESSIONAL SERVICE

- Program Committee Member, IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM), 2016
- Editor, The Korean Computer Scientists and Engineers Association in America (KOCSEA), 2015

RESEARCH PRESENTATIONS

- Korean Computer Scientists and Engineers Association (KOCSEA) Technical Symposium, Harvey Mudd College, Claremont, CA, Dec. 10-11, 2015
- IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM), Washington D.C. Nov. 11, 2015
- 15th KOCSEA (Korean Computer Scientists and Engineers Association in America) Technical Symposium, IBM Watson Research Center, 11-12, December, 2014 (**First place in 2014 KOCSEA Moon-Jung Chung Scholarship Competition**)
- IEEE 14th International Conference on Bioinformatics and Bioengineering (IEEE BIBE), Boca Raton, FL, Nov. 10, 2014
- Korean-American Biomedical Scientists Symposium (KABMS), MD Anderson Cancer Center, Houston, TX, Nov. 1, 2014 (**GenDepot Poster Award**)
- US-KOREA Conference (Korean-American Scientists and Engineers Association), New Jersey, 2013

RESEARCH EXPERIENCES

- Journal Reviews
 - International Journal of Data Mining and Bioinformatics (IJDMB) in 2014, 2015
 - Computers in Biology and Medicine in 2014
 - IEEE Journal of Biomedical and Health Informatics in 2013
 - BMC Bioinformatics in 2011
- Conference Reviews
 - IEEE International Conference on Communications, Signal Processing, and Systems (IEEE CSPS) in 2013
 - IEEE International Conference on Bioinformatics & Biomedicine (IEEE BIBM) in 2010, 2011, 2012, 2013, 2014, and 2015
 - International Symposium on Bioinformatics Research and Applications (ISBRA) in 2011
 - ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB) in 2011
- Program committee
 - IEEE International Conference on Bioinformatics & Biomedicine in 2016
 - Editor, Korean Computer Scientists and Engineers Association in America (KOCSEA) in 2015
 - International Conference on Communications Signal Processing and Systems (CSPS) in 2013
- Visiting Scholar, Tianjin Normal University, Tianjin, China, Jun.-Aug. in 2011

ACADEMIC EXPERIENCES

Jan. 2015 – Aug. 2015	A member of National Center for Faculty Development and Diversity (NCFDD) University of Texas at Arlington
Jul. 2014 – Dec. 2014	Organizational Network for Teaching as Research Advancement and Collaboration (ON-TRAC) University of Texas at Arlington
Aug. 2010 – May. 2014	Enhanced Graduate Teaching Assistant (Only Top 5 Ph.D. student)

Department of Computer Science and Engineering
University of Texas at Arlington

Jun. 2009 – Aug. 2010

Graduate Research Assistant
Department of Computer Science and Engineering
University of Texas at Arlington

Jan. 2009 – May. 2010

Graduate Teaching Assistant
Department of Computer Science and Engineering
University of Texas at Arlington

TEACHING EVALUATION (1=bad to 5=excellent)

	The instructor clearly defined and explained the course objectives and expectations.	The instructor was prepared for each instructional activity.	The instructor communicated information effectively.	The instructor encouraged me to take an active role in my own learning.	The instructor was available to students either electronically or in person.
S. 2015 (N=20/33)	4.5	4.8	4.1	4.4	4.7
F. 2014 (N=14/47)	4.2	4.3	3.9	4.2	4.5

HONORS & AWARDS

- Merit-based Graduate School Dissertation Fellowship (\$6726), UT Arlington, April, 2015
- First place in KOCSEA Moon-Jung Chung Scholarship Competition, December, 2014
- College of Engineering Academic Excellence Award, UT Arlington, April 2014
- 2013 KSEA-KUSCO Graduate Scholarship (\$2,000), KSEA-KUSCO, August 2013
(Only 20 were given nationwide annually with recipients mainly from top universities)
- Enhanced Graduate Teaching Assistant, Department of Computer Science and Engineering, UT Arlington, 2010 - 2015 (Only top 5 recipients in the department)
- President of Korea Student Association, UT Arlington, 2011-2012
- Young-Ho Kim Scholarship (\$800 each), Young-Ho Kim, December in 2009 and 2010
- OGS Scholarship (\$1000), Office of Graduate Studies, UT Arlington, January 2009
- Honor scholarship and Undergraduate Grant, Hanyang University, 1998 ~ 2000 and 2005

COMPUTER SKILLS

Application Languages	Proficient in MATLAB, C/C++, Visual C++, Embedded Visual C++, JAVA, R, and Visual Basic
Databases	SQL and Procedure in MySQL, Oracle, and MSSQL
Web Languages	Proficient in ASP, PHP, JAVASCRIPT, CSS, and HTML
Software	Proficient in Oracle and Microsoft SQL Server, Windows, UNIX, and Windows CE

INDUSTRY EXPERIENCES

May 2006 – Nov. 2008	<u>Project Manager</u> of Personal Web Browser (Road Web Browser Project) Next World System Corp., Seoul, Korea
Jul. 2001 – May. 2006	<u>Software Engineer & Consultant</u> Embedded application, Server/Client programming, Database application, Network programming via wireless communication Seoul, Korea