

SHUANG WANG

Assistant Professor

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Shuang Wang is an assistant professor at Department of Biomedical Informatics, University of California San Diego. His research interests include healthcare and genomic data privacy and security, federated data analysis, secure cloud computing and GPU computing. As the PI, he is awarded a NIH K99/R00HG008175 career grant for genome data privacy research (\$926,869, 09/01/14 - 03/31/19) and a NIH R13HG009072 grant (\$34,797, 07/01/16 - 06/30/18) for organizing genome privacy protection competition workshops, which have been reported by Nature News and GenomeWeb. He is the PI of two NIH cloud computing credit grants (CCREQ-2017-03-00036 with \$44,833 and CCREQ-2017-03-00037 with \$47,258, 09/2017 – 09/2018). He has a pending NIH 1R21HG009961 award (\$426,250, 07/01/2018 - 06/30/2020) at 10 percentiles. He has published more than 80 journal/conference papers, one book and three book chapters. He received outstanding achievement award due to the research work on secure genomic data analysis using Intel Software Guard Extensions (SGX) from Intel Corporation, as well as the best paper award in the American Medical Informatics Association (AMIA) 2016 Joint Summits on Translational Science. He is a senior member of IEEE and a member of AMIA.

Education:

- Ph.D. of Electrical and Computer Engineering --- University of Oklahoma, USA GPA: 4.0/4.0 08/2007–12/2011
- Master of Electrical and Computer Engineering --- University of Oklahoma, USA GPA: 4.0/4.0 08/2007–05/2009
- Master of Biomedical Engineering --- Dalian University of Technology, China GPA: 3.56/4.0 09/2004–06/2007
- Bachelor of Applied Physics --- Dalian University of Technology, P. R. China GPA: 3.46/4.0 09/2000–07/2004

Academic and Professional Experiences:

- **(Nov 2015 – present) Assistant professor, Department of Biomedical Informatics, UCSD**
 - ✧ Medical and genomic data privacy and security
 - ✧ Federated biomedical data analysis
 - ✧ Secure cloud computing
- **(2012 – Nov 2015) Postdoctoral Researcher at the Division of Biomedical informatics, University of California San Diego (UCSD), San Diego, CA**
 - ✧ Privacy-preserving medical and genomic data processing
 - ✧ GPU accelerated microRNA analysis to uncover target genes through CUDA-miRanda
 - ✧ Distributed predictive model learning for medical decision support
 - ✧ Genomic data compression
- **(2007 – 2011) Research Assistant, School of Electrical and Computer Engineering, University of Oklahoma**
 - ✧ Distributed source/channel coding using belief propagation and approximate inference
 - ✧ GPU-based high performance computing for source/channel coding
 - ✧ Commercial vehicle route tracking using video detection
 - ✧ Privacy preserving smart metering
- **(2011) Summer internship at the Division of Biomedical informatics, UCSD, San Diego, CA**
 - ✧ Policy-oriented and technical solutions for maintaining privacy of health data while enabling their secondary

use for research

- ✧ CUDA-accelerated privacy preserving data dissemination and analysis
- **(2008 and 2009) Summer internship at Soft Imaging LLC, Houston, Texas**
 - ✧ Worked on GPU-accelerated genome sequencing
 - ✧ Worked on the project Lossless Watermarking for Data Security and Integrity of Medical Images, which was supported by the National Institutes of Biomedical Imaging and Bioengineering (NIBIB)
- **(2005 – 2007) Research Assistant, Department of Applied Mathematics and Institute of University Students Innovation (IUSI), Dalian University of Technology**
 - ✧ Used Monte Carlo and cellular automata methods to ecosystem simulation
- **(2002 – 2003) Research Assistant, State Key Laboratory of Materials Modification by Laser, Ion and Electron Beams, Dalian University of Technology**
 - ✧ Took part in the study of dusty plasma instability and derived the linear wave solution and a dispersion relation for the project Breathing Modes, which was supported by the National Nature Science Foundation of China (No. 10175013) and International Collaboration Funds (No. 10010760807, 10160420799)

Awards and Honors

- University of California San Diego Faculty Integrity Award, 2017
- Best paper award in the American Medical Informatics Association (AMIA) 2016 Joint Summits on Translational Science
- Outstanding achievement award in secure genomic data analysis with SGX by Intel (2016)
- Best Poster Award, "k-shuffle: a framework for privacy preserving data dissemination," SuperData Summit, San Diego, CA; 2011
- Robert Hughes Centennial Fellowship (2009-2011), College of Engineering, University of Oklahoma
- Student Travel Awards, IEEE GLOBECOM 2010.
- Award of China Youth Science & Technology Innovation (2004) administered by the Central Committee of the Chinese Communist Youth League to award students who had strong innovation ability and were active in scientific research. (National-wide Top 100)
- Outstanding Student Scholarship with Honor (2002, 2003 and 2004), Dalian University of Technology
- Outstanding Winner of 8th "Challenge Cup" Contest of College Students' Scientific and Technological Work (2003) sponsored by Ministry of Education of the P. R. China and China Association For Science & Technology (TOP 6%)
- Outstanding Winner of China Undergraduate Mathematical Contest in Modeling (CUMCM) (2001, 2002 and 2003) administered by Ministry of Education P. R. China and China Society for Industrial and Applied Mathematics
- Innovation Fellowship (2001, 2002 and 2003), Dalian University of Technology

Professional Societies and Public Advisory Committees:

- Senior Member of Institute of Electrical and Electronics Engineers (IEEE)
- Member of American Medical Informatics Association (AMIA)

Publications: (* These authors contributed equally)

Book and Book Chapters:

1. S. Wang*, X. Jiang*, D. Fox, L. Ohno-Machado, "Preserving Genome Privacy in Research Studies", book

- chapter in Medical Data Privacy Handbook, Eds. G. Loukides and A. Gkoulalas-Divanis, 11/26/2015
2. N. Mohammed, **S. Wang**, R. Chen, X. Jiang, “Private Genome Data Dissemination”, book chapter in Medical Data Privacy Handbook, Eds. G. Loukides and A. Gkoulalas-Divanis, Springer, 11/26/2015
 3. **S. Wang**, Y. Fang, S. Cheng, “Distributed source coding theory and practice”, Wiley, 07/2016
 4. W. Dai, **S. Wang**, H. Xiong, X. Jiang, “ Privacy Preserving Federated Big Data Analysis” book chapter in Guide to Big Data Applications, S. Srinivasan. (Eds), Springer-Verlag 2017

Journal Articles

1. X. Wang, **S. Wang**, Q. Pan, Y. Liu, M. He, “Breathing Modes in Dusty Plasma”, Plasma Science & Technology, 5(4): 1901, 2003.
2. M. He, Q. Pan, **S. Wang**, “Final State of Ecosystem Containing Grass, Sheep and Wolves With Aging”, International Journal of Modern Physics C, 16(1): 177-190, 2005.
3. M. He, **S. Wang**, “A Study of Immunity Based on Penna Aging Model”, International Journal of Modern Physics C, 17(4): 479-492, 2006
4. **S. Wang**, L. Cui, S. Cheng, Y. Zhai, M. Yeary and Q. Wu, “Noise Adaptive LDPC Decoding Using Particle filtering”, IEEE Transactions on Communications, 59 (4): 913-916, 2011.
5. L. Cui, **S. Wang**, S. Cheng and M. Yeary “Adaptive Binary Slepian-Wolf Decoding Using Particle Based Belief Propagation”, IEEE Transactions on Communications, 59 (9): 2337-2342, 2011
6. **S. Wang**, L. Cui, D. Liu, R. Huck, P. Verma, James Jr. Sluss and S. Cheng, “Vehicle Identification via Sparse Representation”, IEEE Transactions on Intelligent Transportation Systems, 13(2):955-962, 2012.
7. **S. Wang**, L. Cui, S. Cheng, L. Stankovic, V. Stankovic “Adaptive Correlation Estimation With Particle Filtering For Distributed Video Coding”, IEEE Transactions on Circuits and Systems for Video Technology, 22 (5): 649-658, 2012.
8. L. Cui, **S. Wang**, S. Cheng, “Adaptive Slepian-Wolf Decoding Based on Expectation Propagation”, IEEE Communications Letters, 16 (2): 252-255, 2012.
9. **S. Wang**, L. Cui, L. Stankovic, and V. Stankovic, S. Cheng, “Onboard Low-Complexity Compression of Solar Stereo Images”, IEEE Transactions on Image Processing, 21(6): 3114-3118 (2012). PMID: 22345534
10. **S. Wang**, L. Cui, J. Que, Dae-Hyun Choi, X. Jiang, S. Cheng and L. Xie “A Randomized Response Model For Privacy Preserving Smart Metering”, IEEE Transactions on Smart Grid, 3(3): 1317-1324, 2012. PMID: 23243488
11. V. Stankovic, L. Stankovic, **S. Wang**, S. Cheng “Distributed Compression for Condition Monitoring of Wind Farms”, IEEE Transactions on Sustainable Energy, 4 (1):174-181, 2013.
12. X. Jiang, A. Menon, **S. Wang**, J. Kim, and L. Ohno-Machado “Doubly Optimized Calibrated Support Vector Machine (DOC-SVM): An Algorithm for Joint Optimization of Discrimination and Calibration”, *PLoS ONE*, 7(11):e48823, 2012. PMID: 23139819
13. X. Jiang, Z. Ji, **S. Wang**, N. Mohammed, S. Cheng, and L. Ohno-Machado “Differential-Private Data Publishing Through Component Analysis”, Transaction on Data Privacy, 6 (1): 19-34, 2013. PMID: 24409205
14. **S. Wang**, X. Jiang, Y. Wu, L. Cui, S. Cheng, L. Ohno-Machado, “EXpectation Propagation LOGistic REgression (EXPLORER): Distributed Privacy-Preserving Online Model Learning”, Journal of Biomedical Informatics, 46 (3): 480-496, 2013. PMID: 23562651

15. W. Jiang, P. Li, **S. Wang**, Y. Wu, M. Xue, and L. Ohno-Machado, X. Jiang, "WebGLORE: A Webservice for Grid LOGistic REGression", *Bioinformatics*, 29(24): 3238-3240, 2013. PMID: 24072732
16. X. Jiang, K. Tse, **S. Wang**, S. Doan, H. Kim, L. Ohno-Machado, "Recent Trends in Biomedical Informatics: A Study Based on JAMIA Articles", *Journal of the American Medical Informatics Association*, 20: e198-e205, 2013. PMID: 24214018
17. P. Li, **S. Wang**, J. Kim, H. Xiong, L. Ohno-Machado, X. Jiang, "DNA-COMPACT: DNA COMpression Based on a Pattern-Aware Contextual Modeling Technique", *PLoS one*, 8(11): e80377, 2013. PMID: 24282536
18. P. Li, X. Jiang, **S. Wang**, J. Kim, H. Xiong, L. Ohno-Machado, "HUGO: Hierarchical mUlti-reference Genome cOmpression for Aligned Reads", *Journal of the American Medical Informatics Association*, 21(2): 363-373, 2014. PMID: 24368726
19. N. Deligiannis, A. Munteanu, **S. Wang**, S. Cheng, P. Schelkens, "Maximum Likelihood Laplacian Correlation Channel Estimation in Layered Wyner-Ziv Coding", *Signal Processing IEEE Transactions on*, 62(4): 892-904, 2014.
20. Z. Ji, X. Jiang, **S. Wang**, L. Xiong, and L. Ohno-Machado. "Differentially Private Distributed Logistic Regression Using Private and Public Data", *BMC Medical Genomics*, 7 (S1): S14, 2014. PMID: 25079786
21. **S. Wang**, J. Kim, X. Jiang, S. Brunner, L. Ohno-Machado, "GAMUT: GPU Accelerated MicroRNA Analysis to Uncover Target Genes Through CUDA-miRanda", *BMC Medical Genomics*, 7(S1): S9, 2014. PMID: 25077821
22. J. Kim, E. Levy, A. Ferbrache, P. Stepanowsky, C. Farcas, **S. Wang**, S. Brunner, T. Bath, Y. Wu, and L. Ohno-Machado, "MAGI: a Node.js Web Service for Fast MicroRNA-Seq Analysis In a GPU Infrastructure", *Bioinformatics*, 30(9): 2826-7, 2014. PMID: 24907367
23. **S. Wang**, X. Jiang, F. Chen, L. Cui, and S. Cheng, "Streamlined Genome Sequence Compression Using Distributed Source Coding", *Cancer Informatics*, 13 (S1): 123-31, 2014. PMID: 25520552
24. **S. Wang**, X. Jiang, N. Mohammed, R. Chen, "Differentially Private Genome Data Dissemination Through Top-Down Specialization", *BMC Medical Informatics and Decision Making*, 14 (S1): S2, 2014. PMID: 25521306
25. X. Jiang, Y. Zhao, X. Wang, B. Malin, **S. Wang**, L. Ohno-Machado, H. Tang, "A Community Assessment of Privacy Preserving Techniques On Human Genome Data", *BMC Medical Informatics and Decision Making*, 14 (S1): S1, 2014. PMID: 25521230
26. A. Roozgard, N. Barzigar, **S. Wang**, X. Jiang, and Samuel Cheng, "Empirical Transition Probability Indexing Sparse-Coding Belief Propagation (ETPI-SCoBeP) Genome Sequence Alignment" *Cancer Informatics* 13 (S1): 159-65, 2015 PMID: 25983537
27. Y. Wu, X. Jiang, **S. Wang**, W. Jiang, P. Li, L. Ohno-Machado, "Grid Multi-Category Response Logistic Models", *BMC Medical Informatics and Decision Making*, 15:10, 2015. PMID: 25886151
28. C. Lu*, **S. Wang***, Y. Wu, Z. Ji, L. Xiong, X. Jiang, L. Ohno-Machado, "WebDISCO: a Webservice for DIStributed COx model learning without patient-level data sharing", *Journal of the American Medical Informatics Association* 2015 Nov; 22(6):1212-9 PMID: 26159465
29. D. Han*, **S. Wang***, C. Jiang, X. Jiang, H. Kim, J. Sun, L. Ohno-Machado, "Trends in biomedical informatics: Automated topic analysis of JAMIA articles" 2015 Nov;22(6):1153-63 PMID: 26555018
30. Y. Zhang, W. Dai, X. Jiang, H. Xiong, **S. Wang**, "FORESEE: Fully Outsourced secuRe gEnome Study basEd on homomorphic Encryption" *BMC Medical Informatics and Decision Making*, 2015; 15:S5 PMID: 26733391
31. S. Constable, Y. Tang, **S. Wang**, X. Jiang, S. Chapin, "Privacy-Preserving GWAS Analysis on Federated

- Genomic Datasets" by BMC Medical Informatics and Decision Making, 2015; 15:S2 PMID: 26733045
32. **S. Wang***, Y. Zhang*, W. Dai, K. Lauter, M. Kim, Y. Tang, H. Xiong, X. Jiang "HEALER: Homomorphic computation of ExAct Logistic rEgRes-sion for secure rare disease variants analysis in GWAS" *Bioinformatics*, 2016 Jan 15; 32(2):211-8 PMID: 26446135
 33. Y. Li, X. Jiang, **S. Wang**, H. Xiong, L. Ohno-Machado, "VERTical Grid lOgistic regression (VERTIGO)" *Journal of the American Medical Informatics Association* 2016 May;23(3):570-9 PMID: 26554428
 34. L. Yang*, **S. Wang***, X. Jiang, S. Cheng, H. Kim. "PATTERN: Pain Assessment for paTients who can't TELL using Restricted Boltzmann machine", *BMC Medical Informatics and Decision Making*. 2016 Jul 25;16(3):189.
 35. H. Shi, C. Jiang, W. Dai, X. Jiang, Y. Tang, L. Ohno-Machado, **S. Wang** "Secure Multi-pArty Computation Grid lOgistic REgression (SMAC-GLORE)" *BMC Medical Informatics and Decision Making*. 2016 Jul 25;16(3):175. PMID: 27454168
 36. **S. Wang**, X. Jiang, S. Singh, R. Marmor, L. Bonomi, D. Fox, M. Dow, L. Ohno-Machado, "Genome privacy: challenges, technical approaches to mitigate risk, and ethical considerations in the United States", *Annals of The New York Academy of Sciences*, 2017, 1387(1):73-83 PMID: 27681358
 37. **S. Wang**, L. Bonomi, W. Dai, F. Chen, C. Cheung, C. S. Bloss, S. Cheng, X. Jiang, "Big Data Privacy in Biomedical Research", *IEEE Transactions on Big Data*, 2016, September 13.
 38. H. Tang*, X. Jiang*, X. Wang*, **S. Wang***, H. Sofia, D. Fox, K. Lauter, B. Malin, A. Telenti, L. Xiong, L. Ohno-Machado, "Protecting Genomic Data Analytics in the Cloud: State of the Art and Opportunities", *BMC Medical Genomics*, 2016 9(1):63 PMID: 27733153
 39. W. Farhan, Z. Wang, Y. Huang, **S. Wang**, F. Wang, X. Jiang, "A Predictive Model for Medical Events Based on Contextual Embedding of Temporal Sequences", *JMIR Medical Informatics*, 2016 Nov. 25;4(4):e39. PMID: 27888170
 40. PS. Dulai, S. Singh, X. Jiang, F. Peerani, N. Narula, K. Chaudrey, D. Whitehead, D. Hudesman, D. Lukin, A. Swaminath, E. Shmidt. **S. Wang**, B. Boland, J. Chang, S. Kane, C. Siegel, E. Loftus, W. Sandborn, B. Sands, J. Colombel. "The Real-World Effectiveness and Safety of Vedolizumab for Moderate–Severe Crohn’s Disease: Results From the US VICTORY Consortium" *The American journal of gastroenterology* 2016 August, **111**:1147-1155. PMID: 27296941
 41. JL. Raisaro, F. Tramèr, Z. Ji, D. Bu, Y. Zhao, K. Carey, D. Lloyd, H. Sofia , D. Baker, P. Flicek, S. Shringarpure, C. Bustamante, **S. Wang**, X. Jiang, L. Ohno-Machado, H. Tang, X. Wang, J. Hubaux, "Addressing Beacon Re-Identification Attacks: Quantification and Mitigation of Privacy Risks", *Journal of the American Medical Informatics Association*. 2017 Jul; 24(4):799-805, PMID: 28339683
 42. F. Chen*, **S. Wang***, X. Jiang, S. Ding, Y. Lu, J. Kim, S. Sahinalp, C. Shimizu, J. Burns, V. Wright, E. Png, M. Hibberd, D. Lloyd, H. Yang, A. Telenti, C. Bloss, D. Fox, K. Lauter, L. Ohno-Machado "PRINCESS: Privacy-protecting Rare disease International Network Collaboration via Encryption through Software guard extensionS", *Bioinformatics*. 2017, 33 (6): 871-878 PMID: 28065902
 43. R. Miotto, F. Wang, **S. Wang**, X. Jiang, and J. Dudley "Deep Learning for Healthcare: Review, Opportunities and Challenges", *Briefings in Bioinformatics* In press, 2017 May, PMID:28481991
 44. R. Marmor, W. Dai, X. Jiang, **S. Wang**, S. Blair, J. Huh, "Increase in Contralateral Prophylactic Mastectomy Conversation Online Unrelated to Decision-Making", *Journal of Surgical Research*, 2017 Oct; 218:253-60, PMID: 28985858

45. F. Chen, C. Wang, W. Dai, X. Jiang, N. Mohammed, M. Aziz, M. Sadat, C. Sahinalp, K. Lauter, **S. Wang** “PRESAGE: PRivacy-preserving gENetic testing via SoftwARE Guard Extension”, BMC Medical Genomics, 2017 Jul 26;10(Suppl 2):48, PMID: 28786365
46. M. Aziz, M. Sadat, D. Alhadidi, **S. Wang**, X. Jiang, C. Brown, N. Mohammed, “Privacy Preserving Techniques of Genomic Data A Survey”, Briefings in Bioinformatics, In press, 2017 Nov, PMID: 29121240 .
47. **S. Wang**, X. Jiang, H. Tang, X. Wang, D. Bu, K. Carey, S. OM Dyke, D. Fox, C. Jiang, K. Lauter, B. Malin, H. Sofia, A. Telenti, L. Wang, W. Wang, and Lucila Ohno-Machado, “ A community effort to protect genomic data sharIng, collaboration and outsourcing”, NPJ Genomic Medicine, In press, 2017 Oct, PMID: 29263842
48. M. Wang, Z. Ji, **S. Wang**, J. Kim, H. Yang, X. Jiang, L. Ohno-Machado “Mechanisms to Protect the Privacy of Families when Using the Transmission Disequilibrium Test in Genome-Wide Association Studies” Bioinformatics 2017 Dec, PMID: 29036461
49. M. Wang, Z. Ji, **S. Wang**, H. Kim, X. Jiang “Selecting Optimal Subset to release under Differentially Private M-estimators from Hybrid Datasets”, Transactions on Knowledge and Data Engineering, 2017, 30 (3): 573 – 584.
50. M. Sadat, X. Jiang, M. Aziz, **S. Wang**, N. Mohammed, “Secure and Efficient Regression Analysis using a Hybrid Cryptographic Framework”, JMIR Medical Informatics, 2018, 6(1): e14, PMID: 29506966
51. F. Chen*, X. Jiang*, **S. Wang***, L. Schilling, D. Meeker, T. Ong, M. Matheny, J. Doctor, L. Ohno-Machado, J. Vaidya, “Perfectly Secure and Efficient Two-party Electronic Health Record Linkage”, IEEE Internet Computing, accepted Jan, 2018.
52. J. Lee, J. Sun, F. Wang, **S. Wang**, Y. Chen, C. Jun, X. Jiang “Privacy-Preserving Patient Similarity Learning in a Federated Environment”, JMIR Medical Informatics, accepted Jan 2018.
53. M. Kim, Y. Song, **S. Wang**, Y. Xia, X. Jiang, “Secure Logistic Regression based on Homomorphic Encryption”, JMIR Medical Informatics, accepted Jan 2018.
54. Y. Huang, J. Lee, **S. Wang**, J. Sun, H. Liu, X. Jiang, “Privacy-Preserving Harmonization of Contextual Embeddings From Different Sources”, JMIR Medical Informatics, accepted Mar 2018
55. Y. Jiang, J. Hamer, C. Wang, X. Jiang, M. Kim, Y. Song, Y. Xia, N. Mohammed, M. Sadat, **S. Wang**, “SecureLR: Secure Logistic Regression Model via a Hybrid Cryptographic Protocol”, IEEE Transactions on Computational Biology and Bioinformatics, accepted 2018.
56. M. Sadat, M. Aziz, N. Mohammed, F. Chen, X. Jiang, **S. Wang**, “SAFETY: Secure gwAs in Federated Environment Through a hYbrid solution”, IEEE Transactions on Computational Biology and Bioinformatics, accepted 2018.
57. A. Arellano, W. Dai, **S. Wang**, X. Jiang, L. Ohno-Machado, “Privacy Policy and Technology in Biomedical Data Science”, Annu. Rev. Biomed, 2018, 1

Peer-reviewed Conferences [Full Papers]:

1. **S. Wang**, S. Cheng, and Q. Wu, “A Parallel Decoding Algorithm Of LDPC Codes Using CUDA“, Asilomar Conference on Signals, Systems, and Computers, pp. 171-175, 2008, Pacific Grove, CA
2. L. Cui, **S. Wang**, S. Cheng, and Q. Wu, “Noise Adaptive LDPC Decoding Using Particle Filters”, Proc. Conference on Information Sciences and Systems (CISS), pp. 37-42, 2009, Baltimore, MD
3. S. Cheng, **S. Wang**, and L. Cui, “Adaptive Slepian-Wolf Decoding Using Particle Filtering Based Belief Propagation”, 47th Annual Allerton Conference on Communication, Control and Computing, pp. 607-612, 2009, Urbana, IL.

4. L. Stankovic, V. Stankovic, **S. Wang** and S. Cheng, "Distributed Video Coding With Particle Filtering For Correlation Tracking", European Signal Processing Conference (EUSIPCO), pp. 2146-2150, 2010.
5. S. Cheng, **S. Wang**, and L. Cui, "Adaptive Nonasymmetric Slepian-Wolf Decoding Using Particle Filtering Based Belief Propagation", Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), pp. 3354-3357, 2010, Dallas, TX.
6. L. Cui, **S. Wang** and S. Cheng, "Adaptive Distributed Source Coding Over Erasure Channels Using Particle-based Belief Propagation," IEEE Global Communications Conference, Exhibition & Industry Forum (GLOBECOM), pp. 1-5, 2010, Miami, FL.
7. **S. Wang**, L. Cui and S. Cheng, "Adaptive Wyner-Ziv Decoding Using Particle-based Belief Propagation," IEEE Global Communications Conference, Exhibition & Industry Forum (GLOBECOM), pp. 1-5, 2010, Miami, FL.
8. L. Stankovic, V. Stankovic, **S. Wang**, and S. Cheng, "Correlation Estimation With Particle-based Belief Propagation For Distributed Video Coding", Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), pp. 1505-1508, 2011, Prague, Czech Republic.
9. **S. Wang**, L. Cui, S. Cheng, L. Stankovic, V. Stankovic, "Onboard Low-complexity Compression Of Solar Images," in Proc. International Conference on Image Processing (ICIP), pp.2641-2644, 2011, Brussels, Belgium
10. **S. Wang**, L. Cui, S. Cheng, "Noise Adaptive LDPC Decoding Using Expectation Propagation" IEEE Global Communications Conference, Exhibition & Industry Forum (GLOBECOM), pp. 1-5, 2011, Houston, TX
11. **S. Wang** and S. Cheng, V. Stankovic, L. Stankovic, "Distributed Compression For Condition Monitoring Of Wind Farms" IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), pp. 3085-3088, 2012.
12. L. Cui*, **S. Wang***, and S. Cheng, "Online SNR Statistic Estimation For LDPC Decoding Over AWGN Channel Using Laplace Propagation" IEEE GLOBECOM, pp. 3743-3747, Dec 2012, Los Angeles, CA
13. L. Cui*, **S. Wang***, X. Jiang, and S. Cheng, "Adaptive Distributed Video Coding With Correlation Estimation Using Expectation Propagation", SPIE, San Diego, pp. 84990M, Aug 2012, PMID: 23750314.
14. L. Cui*, **S. Wang***, S. Cheng, L. Stankovic, and V. Stankovic, "Adaptive Slepian-Wolf Decoding Using Laplace Propagation", 20th European Signal Processing Conference (EUSIPCO), pp. 564-568, 2012.
15. X. Jiang, J. Kim, Y. Wu, **S. Wang**, and L. Ohno-Machado, "Selecting Cases For Whom Additional Tests Can Improve Prognostication" AMIA 2012 Annual Symposium, pp. 1260-1269, 2012, PMID: 23304404
16. A. Roozgard, N. Barzigar, **S. Wang**, X. Jiang, L. Ohno-Machado, S. Cheng, "Nucleotide Sequence Alignment Using Sparse Coding and Belief Propagation", 35th Annual International IEEE EMBS Conference, pp. 588-591, 2013. PMID: 24109755
17. **S. Wang**, X. Jiang, Z. Ji, R. El-Kareh, J. Choi, H. Kim, "When You Can't Tell When It Hurts: A Preliminary Algorithm To Assess Pain in Patients Who Can't Communicate" AMIA 2013 Annual Symposium, Washington, DC, pp. 1429-1437, 2013. PMID: 24551418
18. H. Kim, H. Chung, **S. Wang**, X. Jiang, J. Choi, "SAPPIRE: A Prototype Mobile Tool for Pressure Ulcer Risk Assessment" Stud Health Technol Inform. 201, pp. 433-440, 2014. PMID: 24943578
19. F. Chen, S. Cheng, N. Mohammed, **S. Wang**, X. Jiang "PRECISE:PRivacy-prEserving Cloud-assisted quality Improvement Service in hEalthcare", the 8th International Conference on Systems Biology (ISB), pp. 176-183, 2014 PMID: 26146645
20. W. Wei, D. Demner-Fushman, **S. Wang**, X. Jiang, and L. Ohno-Machado, "Ranking Medical Subject Headings

- using a factor graph model" AMIA 2015 Joint Summits on Translational Science PMID: 26306236
21. F. Chen, N. Mohammed, **S. Wang**, W. He, S. Cheng, X. Jiang "Cloud-Assisted Distributed Private Data Sharing" ACM Conference on Bioinformatics, Computational Biology, and Health Informatics, 2015
 22. L. Wang, D. Aref, S. Rathi, L. Shen, X. Jiang, **S. Wang**, PALME: PATients Like My gEnome, AMIA Summits on Translational Science, San Francisco, CA, 2016. [Best student paper award]
 23. F. Chen, M. Dow, S. Ding, Y. Lu, X. Jiang, **S. Wang**, PREMIX: PRivacy-preserving EstiMation of Individual admIXture, AMIA Annu Symp, Chicago, IL, 2016.
 24. W. Wei, R. Marmor, S. Singh, **S. Wang**, D. Demner-Fushman, T. Kou, C. Hsu, L. Ohno-Machado, Finding Related Publications: Extending the Set of Terms Used to Assess Article Similarity, *AMIA Joint Summits on Translational Science*, San Francisco, CA, 2016 PMID: 27570676
 25. L. Yang, S. Cheng, P. Verma, **S. Wang**, "Text Search: Towards Fast Text Localization in Scene Images", 2016 IEEE International Symposium on Multimedia (ISM), San Jose, CA, 2016
 26. C. Wang and Y. Jiang, N. Mohammed, F. Chen, X. Jiang, M. Aziz, M. Sadat, **S. Wang**, "SCOTCH: Secure Counting Of encryptEd genomiC data using a Hybrid approach", AMIA Annu Symp, Washington, DC, 2017
 27. K. Areekijserree, J. Chen, Y. Tang, S. Wang, A. Iyengar, B. Palanisamy, "Secure and Efficient Multi-Party Directory Publication for Privacy-Preserving Data Sharing", International Conference on Security and Privacy in Communication Networks (SECURECOMM), Singapore, 2018.

Abstracts:

1. **S. Wang**, L. Cui, S. Cheng, and R.C. Huck, "Noise Adaptive LDPC Decoding Using Particle Filtering Based On Parallel GPU Architecture," in 2009 NVIDIA GPU technology conference, October 2009.
2. X. Jiang, **S. Wang**, Z. Ji, L. Xiong, L. Ohno-Machado, "A Randomized Response Model For Privacy Preserving Data Dissemination", IEEE Conference on Health informatics, Imaging, and System Biology (HISB), Poster, 2012:138.
3. **S. Wang***, X. Jiang*, L. Cui, S. Cheng, L. Ohno-Machado, "SecUre Privacy-preserving medical image ComRessiOn (SUPERMICRO)", IEEE Conference on Health informatics, Imaging, and System Biology (HISB), Poster, 2012:130.
4. **S. Wang***, X. Jiang*, L. Cui, S. Cheng, H. Xiong, L. Ohno-Machado, "Privacy-preserving Biometric System For Secure Fingerprint Authentication", IEEE Conference on Health informatics, Imaging, and System Biology (HISB), Poster, 2012:128.
5. **S. Wang**, X. Jiang, L. Cui, S. Cheng, L. Ohno-Machado, "PRivacy-Oriented Medical Information Secure BiomEtric System", National Centers for Biomedical Computing (NCBC) showcase, 10/07/2012.
6. F. Chen, M. Rutkowschi, C. Fenner, R. Huck, **S. Wang**, S. Cheng, "Compression Of Distributed Correlated Temperature Data In Sensor Networks" Data Compression Conference (DCC), 2013.
7. **S. Wang**, X. Jiang, L. Cui, W. Dai, P. Li, H. Xiong, N. Deligiannis, S. Cheng, and L. Ohno-Machado, "Genome Sequence Compression With Distributed Source Coding", Data Compression Conference (DCC), 2013
8. L. Ohno-Machado, C. Farcas, J. Kim, **S. Wang**, X. Jiang, "Genomes In The Cloud: Balancing Privacy Rights And The Public Good" AMIA Translational Bioinformatics, 2013.
9. **S. Wang**, Xiaoqian Jiang, Noman Mohammed, Rui Chen, Lucila Ohno-Machado, "Differentially Private Genome Data Dissemination Through Top-Down Specialization" HealthTech 2014.
10. W. Wei, **S. Wang**, X. Jiang, L. Ohno-Machado, A keyword suggestion strategy based on citation networks, AMIA Annual Symposium, Washington D.C., 2015
11. Y. Zhang, W. Dai, **S. Wang**, M. Kim, K. Lauter, J. Sakuma, H. Xiong, and X. Jiang, "SECRET: Secure

- Edit-distance Computation over homomorphically Encrypted data,” in 5th Annual Translational Bioinformatics Conference (TBC), 2015
12. E. Bell, D. Guijarro, H. Kim, A. Richardson, J. Huh, **S. Wang**, L. Ohno-Machado, "Categorizing Clinical Data to Make it Easier for Patients to Indicate Their Data Sharing Preferences" AMIA 2016
 13. M. Matheny, D. Westerman, L. Pearlman, J. Gieringer, X. Jiang, C. Farcas, T. Knight, **S. Wang**, A. Perkins, L. Ohno-Machado, B. Clarke, D. Meeker, "An Integrated Privacy Preserving Collaborative Analytics Platform: The PCORnet pSCANNER-PopMedNet™ Software Suite", AMIA 2016
 14. J. Vaidya, M. Matheny, T. Ong, **S. Wang**, M. Mooy, L. Schilling, "Record Linkage Challenges in Distributed Data Networks", EDM Forum Concordium Challenge Workshop 2016.
 15. F. Chen, I. Numanagic, S. Simmons, C. Kockan, B. Berger, X. Jiang, T. Zhu, W. Wu, **S. Wang**, C. Sahinalp "SCENA: Secure Compressed genomic data Analysis in a cloud environment", Biological Data Science 2016
 16. X. Jiang, **S. Wang** "Secure Multiparty Computation on Genomic Data using Software Guard Extension", SciDataCon 2016
 17. L. Phong, X. Jiang, **S. Wang**, "A Simple and Efficient Method for Private Matching", AMIA Annu Symp, Washington, DC, 2017
 18. C. Jiang, X. Jiang, **S. Wang**, D. Guijarro, E. Bell, I. Jang, G. Yun, M. Rahman, L. Ohno-Machado, H. Kim "MALTASE: a Mobile Application To improve patients' Access to their data Sharing preference", AMIA Annu Symp, Washington, DC, 2017

Teaching Experience:

University of California, San Diego

MED264 Principles of Biomedical Informatics - Guest lecturer (Graduate Level, Fall 2017)

University of California, San Diego

MED 273: Communicating Biomedical Informatics - Guest lecturer (Graduate Level, Fall 2017)

University of California, San Diego

MED 262: Current Trends in Biomedical Informatics (Graduate Level, Spring 2017)

University of California, San Diego

MED 262: Current Trends in Biomedical Informatics (Graduate Level, Winter 2017)

University of California, San Diego

MED 262: Current Trends in Biomedical Informatics (Graduate Level, Fall 2016)

University of California, San Diego

MED264 Principles of Biomedical Informatics - Guest lecturer (Graduate Level, Fall 2016)

University of California, San Diego

MED 262: Current Trends in Biomedical Informatics (Graduate Level, Spring 2016)

University of California, San Diego

MED 262: Current Trends in Biomedical Informatics (Graduate Level, Winter 2016)

University of California, San Diego

MED264 Principles of Biomedical Informatics - Guest lecturer (Graduate Level, Fall 2015)

University of California, San Diego

MED264 Principles of Biomedical Informatics - Guest lecturer (Graduate Level, Fall 2014)

Invited Talks

1. *When you can't tell when it hurts: a preliminary algorithm to assess pain in patients who can't communicate*
AMIA 2013 Annual Symposium, Washington, DC (11/2013)
2. *WIDGET: a Web Interface for Dynamic Genome-privacy Evaluation*
2014 Human Genome Privacy Workshop, San Diego, CA (03/2014)
3. *HUGO: Hierarchical mUlti-reference Genome cOmpression for aligned reads*
iDASH Informatics Open Access Journal Club, San Diego, CA (04/2014)
4. *Privacy-Preserving Shared Access to Computing on Sensitive Data: A Feasibility Study*
iDASH External Webinar, San Diego, CA (05/2014)
5. *Method beyond WebGLORE for privacy-preserving distributed analysis,*
Electronic Data Methods (EDM) Forum Workshop, San Diego, CA, (06/2014)
6. *Differentially Private Genome Data Dissemination Through Top-Down Specialization,*
2014 USENIX Summit on Health Information Technologies (HealthTech '14), San Diego CA, (08/2014)
7. *Distributed cox model learning without patient-level data sharing*
Computing stats with private data, University of Michigan, Ann Arbor, MI, (02/2015)
8. *Panel: Legal and Ethical Issues in Genome Privacy*
iDASH and pSCANNER Data Sharing Symposium San Diego, CA, (10/2015)
9. *Privacy Preserving Shared Access to Computing on Sensitive Data: A Feasibility Study (DBP7)*
iDASH and pSCANNER Data Sharing Symposium San Diego, CA, (10/2015)
10. *Protecting Medical Data Privacy in Biomedical Research Studies*
Invited talk at Northwest A&F University, Xi'an, China (06/2016)
11. *Protecting Genomic Data Privacy in Biomedical Research Studies*
2016 international Conference on Translational Biomedical Informatics, Guiyang, China (06/2016)
12. *Record Linkage Challenges in Distributed Data Networks (Panel)*
EDM Forum Concordium Challenge Workshop (09/2016)
13. *PROGRESS: PROtecting the privacy of Genomes in REsearch StudieS*
2017 Stanford Data science & computational precision Health Conference (02/2017)
14. *Untrusted biomedical data privacy protection*
Soochow University, Biomedical Informatics Academic Lecture Series (08/2017)
15. *Genomic Data Privacy and Security Protection Competition*
12th International Workshop on Security (08/2017)
16. *Progress of Homomorphic Encryption for protecting Genomic Data Privacy and Security in the past 4 Years*
iDASH
Competition MIT Homomorphic Encryption Standardization Workshop (Panel) (03/2018)

Peer Reviewing and professional activities:

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| 2010 | Reviewer, International Journal of Electronics and Communications |
| 2010 | Reviewer, IEEE Journal of Selected Topics in Signal Processing |
| 2010 – 2014 | Reviewer, IEEE Transactions on Parallel and Distributed Systems |
| 2011 | Reviewer, Journal of Communications and Networks |
| 2011 | Reviewer, IEEE Transactions on Signal Processing |

2011	Reviewer, EURASIP Journal on Wireless Communications and Networking
2011 – 2012	Reviewer, IEEE Transactions on Communications
2011 – 2013	Reviewer, IEEE Communications Letters
2011 – 2013	Reviewer, Journal of Visual Communication and Image Representation
2012	Reviewer, IEEE Journal On Selected Areas in Communications
2012	Reviewer, Brain Stimulation
2012	Reviewer, Biomedical Signal Processing and Control
2012	Reviewer, KSII Transactions on Internet and Information System
2012	Reviewer, IEEE Signal Processing Letters
2012 – 2013	Reviewer, IEEE Transactions on Circuits and Systems for Video Technology
2012 – 2013	Reviewer, IET Image Processing
2012 – 2014	Reviewer, IEEE Transactions on Image Processing
2013	Reviewer, IEEE Transactions on Smart Grid
2013	Reviewer, BMC Medical Informatics and Decision Making
2013	Reviewer, International Journal of Distributed Sensor Networks
2013	Technical Program Committee, IEEE Wireless Communications and Networking Conference
2013 – 2014	Technical Program Committee, International Conference on Connected Vehicles & Expo
2013 – 2014	Reviewer, Cancer Informatics
2013 – 2014	Reviewer, European Signal Processing Conference (EUSIPCO)
2013 – 2014	Reviewer, IEEE Wireless Communications and Networking Conference (WCNC)
2014	Reviewer, IET Communications
2014	Reviewer, IEEE Transactions on Intelligent Transportation Systems
2014	Reviewer, IEEE Transactions on Industrial Informatics
2014 – 2015	Reviewer, AMIA Annual Symposium
2014 – 2015	Reviewer, KACST grant (managed by AAAS) progress reports
2014 – 2015	Technical Program Committee, iDASH Privacy & Security Workshops
2015 – 2017	Scientific Program Committee, International Workshop on Smart Medical Devices
2015	Scientific Program Committee, Privacy-aware Computational Genomics Workshop
2015 – 2016	Scientific Program Committee, International Workshop on Genome Privacy and Security
2015	Reviewer, IEEE Transactions on Dependable and Secure Computing
2015	Reviewer, Journal of the American Medical Informatics Association
2015 – 2016	Reviewer, BMC Medical Informatics and Decision Making
2016	Reviewer, AMIA Annual Symposium
2016	Reviewer, IEEE Communications Letters
2016	Reviewer, IEEE Journal of Biomedical and Health Informatics
2016	Reviewer, IEEE Transactions on Dependable and Secure Computing
2016	Scientific, Program Committee, International Workshop on Genome Privacy and Security
2016	Reviewer, Computer Methods and Programs in Biomedicine
2016	Reviewer, IEEE Transactions on Intelligent Transportation Systems
2016	Reviewer, BMC Bioinformatics
2016	Reviewer, IEICE Transactions

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- 2016 Reviewer, EURASIP Journal on Image and Video Processing
 - 2016 Guest Editor, PLOS Genetics
 - 2016 Reviewer, Computer Methods and Programs in Biomedicine
 - 2016 Reviewer, AMIA TBI
 - 2016 Reviewer, Journal of Information Security and Applications
 - 2017 Scientific committee, Privacy Aware Machine Learning (PAML)
 - 2017 Reviewer, Bioinformatics
 - 2017 Reviewer, IEEE Security & Privacy
 - 2016 – 2017 Organizer, iDASH Genomic Data Privacy Protection Challenges
 - 2017 Technical Program Committee, IEEE ICTS4eHealth Workshop
 - 2017 Technical Program Committee, 4th Workshop on Genome Privacy and Security (GenoPri 2017)
 - 2017 Technical Program Committee, ACM/BCB
 - 2017 Reviewer, Computer Methods and Programs in Biomedicine
 - 2017 Reviewer, Journal of the Royal Society Interface
 - 2017 Special Issue Editor, BMC Medical Genomics
 - 2017 Reviewer, IET Generation, Transmission & Distribution
 - 2017 Program committee, The 10th International Conference on Security, Privacy and Anonymity in Computation, Communication and Storage
 - 2017 Reviewer, IEEE Transactions on Multimedia
 - 2017 Reviewer, Transactions on Intelligent Transportation Systems
 - 2017 Reviewer, JMIR mHealth and uHealth
 - 2017 Reviewer, International Journal of Electronics and Communications
 - 2017 Reviewer, IEEE Transactions on Industrial Electronics
 - 2017 Reviewer, JAMIA
 - 2017 Reviewer, JBI
 - 2017 Reviewer, Journal of Cancer
 - 2017 Reviewer, Nature Biotechnology
 - 2017 Reviewer, BMC Medicine
 - 2017 Reviewer, IEEE Journal of Biomedical and Health Informatics
 - 2018 Reviewer, IMIA Yearbook
 - 2018 Special Issue Editor, BMC Medical Genomics
 - 2018 Reviewer, IEEE Transactions on Smart Grid
 - 2018 Reviewer, GigaScience
 - 2018 Technical Program Committee, AI4Health 2018
 - 2018 Reviewer, Bioinformatics
 - 2018 Technical Program Committee, 26th Conference on Intelligent Systems for Molecular Biology
 - 2018 Reviewer, JMIR
 - 2018 Technical Program Committee, IEEE ICTS4eHealth Workshop
 - 2018 Technical Program Committee, Workshop on Encrypted Computing and Applied Homomorphic Cryptography

Student Instruction Activities

Category	Student name	Role
2012 - 2013 UCSD visiting student (Master student)	Pinghao Li	Research co-mentor
	Wenchao Jiang	Research co-mentor
2013 iDASH summer intern (PhD student)	Aminmohammad Roozgard	Research mentor
2013 - 2014 UCSD visiting student (Master student)	Xin Tang	Research co-mentor
2014 iDASH summer intern (PhD student)	Feng Chen	Research mentor
2014 - 2015 UCSD visiting student (Master student)	Lichang Wang	Research mentor
	Yuchen Zhang	Research mentor
2014 - 2015 UCSD visiting student (PhD student)	Yong Li	Research co-mentor
	Meng Wang	Research co-mentor
2014 - 2015 UCSD Postdoc researcher	Wenrui Dai	Research co-mentor
	Dima Aref	Research mentor
2015 iDASH summer intern (Undergraduate)	Haoyi Shi	Research mentor
	Suyash Rathi	Research mentor
2015 iDASH summer intern (Master student)	Natnatee Dokmai	Research mentor
	Lei Yang	Research mentor
2015 iDASH summer intern (PhD student)	Lei Yang	Research mentor
2016 iDASH summer intern (High school)	Kenneth Trang	Research mentor
2016 iDASH summer intern (Undergraduate)	Tianyi Zhu	Research mentor
	Weijia Wu	Research mentor
2016 iDASH summer intern (Master student)	Chenghong Wang	Research mentor
2016 UCSD PhD Candidate student	Michelle Dow	Research mentor
2016 UCSD visiting student (Undergraduate)	Jingtian Peng	Research co-mentor
	Chao Jiang	Research mentor
2016 UCSD visiting student (Master student)	Lichang Wang	Research mentor
	Yong Li	Research co-mentor
2016 UCSD visiting student (PhD student)	Yuchen Zhang	Research co-mentor
	Wenrui Dai	Research co-mentor
2016-2017 UCSD Postdoc researcher	Feng Chen	Research co-mentor
	Le Phong	Research mentor
2016-2017 UCSD visiting student (Master student)	Pei Shao	Research mentor
2016-2017 UCSD undergraduate student	Bao Liang	Research mentor
2017 UCSD undergraduate student	Jenny Hamer	Research mentor
2017 UCSD undergraduate student	Chen Liu	Research mentor
2017 UCSD visiting student (Undergraduate student)	Hang Zhang	Research mentor
2017-2018 UCSD visiting student (Master student)	Yichen Jiang	Research mentor
2017-2018 UCSD visiting student (Master student)	Chenghong Wang	Research mentor
2017-2018 UCSD visiting student (Master student)	Shaohua Wang	Research mentor
2017-2018 UCSD Postdoc researcher	April Moreno	Research co-mentor
2017-2018 UCSD Postdoc researcher	Miran Kim	Research co-mentor
2018 UCSD visiting student (Master student)	Xin Du	Research mentor

2018	UCSD visiting student (Master student)	Zhixuan Wu	Research mentor
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Research Support:**A. CURRENT**

- **Protecting the pRivacy Of Genomes in Research StudieS (PROGRESS)** PI: Wang
NIH R00HG008175 Role: Principal Investigator (PI) 09/01/14- 03/31/19
Develop privacy-preserving genomic data protection techniques based on homomorphic encryption, secure multiparty computation and secure hardware.
- **SERGEANT: SEcuRe GENome Analysis Competition** PIs: Ohno-Machado, Jiang, Wang
NIH R13HG009072 Role: M-PI 07/01/16 - 06/30/18
We host an international genome privacy competition to evaluate the state-of-the-art solutions of protecting genome privacy in data sharing and analysis.
- **Two NIH Cloud computing credit grants** PI: Wang
CCREQ-2017-03-00036 and CCREQ-2017-03-00037, Role: PI 09/01/17 – 09/01/18
Develop secure cloud computation algorithms and software for supporting privacy-preserving biomedical data outsourcing.
- **Patient-oriented SCALable National Network for Effectiveness Research (pSCANNER)** PI: Ohno-Machado
PCORI CDRN-1306-04819 Role: co-I 03/31/14 – 09/30/19
This project will allow distributed queries across VINCI (the VA national enterprise data warehouse), the five University of California medical center clinical data warehouses, and three federally qualified health systems in the LA area.
- **Encryption methods and software for privacy-preserving analysis of biomedical data** PI: Tang
Indiana Univ. – NIH U01EB023685 Role: Co-I 07/01/16 – 06/30/19
We propose to develop encryption methods for biomedical data mining, and to implement these methods in open-source software that can be used by biomedical researchers in a plug-and-play manner for the statistical analysis of encrypted biomedical data. Following our approach, biomedical data will be protected by encryption once they are generated, and the subsequent analysis and sharing will always be performed on the encrypted form, which thus can achieve a high security standard for privacy protection in biomedical data science.
- **Decentralized differentially-private methods for dynamic data release and analysis** PI: Jiang, Ohno-Machado
NIH R01GM118609 Role Co-I 01/01/17 – 12/31/2020
A big challenge in biomedical information sharing is to maintain privacy, as inappropriate data handling can put patient's and their family members' sensitive personal information at risk. We will develop a privacy-preserving decentralized framework for dynamic data dissemination and analysis to support cross-institutional collaboration.

B. PENDING

- **SAFETY: Secure genome-wide Association studies in Federated Environment Through a hYbrid solution** PI: Wang
NIH R21HG009961 (*10 percentile*) Role PI 07/01/2018 - 06/30/2020
The major goal of this project is to enable secure and efficient genome wide association studies among different institutions via a hybrid secure solution.

C. UNDER REVIEW

- **Tools for secUre and pRivacy-preserving Biomedical data Outsourcing (TURBO)** PI: Wang
NIH R01GM130726 Role PI 09/01/2018 – 08/31/2023
The major goals of this project are to develop practical yet secure tools to facilitate ordinary biomedical researchers to make better use of the cloud storage and computing services while mitigating the privacy risks.
- **Tools for Secure And Privacy-PresERving Outsourcing (SAPPER)** PI: Wang

NIH R01HG010425

Role PI

09/01/2018 – 08/31/2023

The goal of this project is to develop a suite of practical tools to facilitate biomedical researchers to perform secure outsourced biomedical data analysis in the cloud.

D. PAST

- **iDASH: Integrating Data for Analysis, Anonymization and Sharing** PI: Lucila Ohno-Machado
NIH U54HL108460 Role: Co-I 09/01/10 – 06/30/17 (NCE)
The major goal is to create a National Center for Biomedical Computing that will provide high performance computing infrastructure, develop new data anonymization algorithms to enable privacy-protecting sharing and data analyses of heterogeneous data types, and train the new generation of biomedical informaticians.
- **Privacy-preserved cloud computing for mapping sensitive human genomic sequences** PI: Tang
NIH R01HG007078 Role: Co-I 09/23/13 – 06/30/16
The goal is to study how to share and analysis of human genomic data in a privacy-preserving manner.
- **Research on Arithmetic Coding Spectrum and its Applications** PI: Yong Fang
NSFC 61271280 Role: Co-I 01/01/13 – 12/31/16
Build mathematic models for AC spectrum and provide theoretical guides for the applications and decoder designs of extended AC
- **Reformulating Distributed Source Coding using Graphical Inference for Sensor Networks** PI: Samuel Cheng
NSF 1117886 Role: graduate student 09/01/11 – 08/31/14
The objective of this research is to advance the state-of-the-art of distributed source coding (DSC) for next-generation sensor networks by remodeling DSC as graphical inference problems. The resulting technologies are expected to lead to significant reduction of power consumption for communications and thus prolonged life span of such networks.
- **Biomedical Data Processing with GPU Acceleration** PI: Shuang Wang
Agency: NVIDIA Role: PI 02/01/13- 12/30/13
Develop GPGPU-based data privacy protection algorithms to support privacy-preserving data dissemination.
- **SCANNER: Scalable National Network for Effectiveness Research** PI: Ohno-Machado
AHRQ R01HS019913 Role: Postdoc-Investigator 09/01/10 – 08/31/13
The goal is to develop new strategies and tools to allow secure and privacy-protecting electronic health information exchange for research.