WAYNE STATE UNIVERSITY

Professional Record
Faculty

NAME: Dongxiao Zhu

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DATE PREPARED: 08/09/2022
DATE REVISED: 08/09/2022

DEPARTMENT/COLLEGE: Computer Science/Engineering

PRESENT RANK & DATE OF RANK: Associate Professor, Aug, 18, 2015

WSU APPOINTMENT HISTORY:

Year Appointed/Rank: 2011/Assistant Professor
Year Awarded Tenure: 2015
Year Promoted to Associate Professor: 2015
Year Promoted to Full Professor: N/A

CITIZEN OF: USA

EDUCATION: [Give name of institution, place, and date of degree.]

Baccalaureate: Shandong University, Jinan, China, BS, 1996
Graduate: University of Michigan, Ann Arbor, PhD, 2006
Postgraduate (postdoctoral): N/A
Licensure: N/A
Certification: N/A

FACULTY APPOINTMENTS AT OTHER INSTITUTIONS (Years and Rank):
[Not administrative appointments; see below.]
Jan, 2008 – Aug, 2011, Assistant Professor, University of New Orleans

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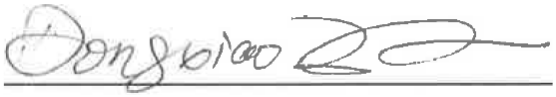
Signature:  09/19/22

PROFESSIONAL SOCIETY MEMBERSHIP(S):

- IEEE senior member
- ACM professional member

HONORS/AWARDS:

- Wayne State University College of Engineering Excellence in Research Award, 2022
- Wayne State University College of Engineering Excellence in Teaching Award, 2016
- Journal of Biophotonics, Wiley: Top Cited Article 2020-2021
- Best Paper Award Top 3 Finalist, as the Senior Author, 16th IEEE International Conference on Machine Learning and Application, Cancun, Mexico (ICMLA'17)
- Best Poster Award Top 3 Finalist, as the Senior Author, 16th IEEE International Conference on Machine Learning and Application, Cancun, Mexico (ICMLA'17)
- Interview by Scientific American to comment on AI assisted diagnosis.
- Media Coverage by dbusiness (Wayne State Researchers Use AI to Bring Micro-transit to Hourly Workers)
- Media Coverage (Wayne State research team developing AI model to aid in early detection of SARS-CoV2 in children)
- Media Coverage (Wayne State research team developing AI model to aid in early detection of SARS-CoV2 in children)

I. TEACHING

A. Years at Wayne State: 12 years

B. Years at Other Colleges/Universities (please list)

- 3 years and 8 months at University of New Orleans
- 1 year and 8 months at Stowers Institute for Medical Research

C. Courses Taught at Wayne Sate in Last Five Years

- Undergraduate:
  - CSC 5825 Intro. to Machine Learning and Applications, Winter 2017, Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022
- Graduate:
  - CSC 8860 Seminar Topics in Computer Vision and Pattern Recognition, Fall 2017
  - CSC 8800 Seminar in Machine Learning and AI, Winter 2021, Winter 2022
  - CSC 5825 Intro. to Machine Learning and Applications, Winter 2017, Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022
  - CSC 6580 (Design and Analysis of Algorithms), Winter 2015, Winter 2016, Winter 2017
  - CSC 7825 (Machine Learning), Fall 2014, Fall 2015, Fall 2016, Winter 2019, Winter 2020, Winter 2021, Winter 2022

D. Essays/Theses/Dissertations Directed

1. Students by Name, Level, Title of Project, Year

<u>As the major professor</u>:

1. **Zhansheng Duan**, Postdoctoral, **Research project title**: Network discovery from gene sets, 2010 – 2011.
2. **Emer Ulgen**, Postdoctoral, **Research project title**: Multivariate statistical models for network inference, 2011.
3. **Nan Deng**, PhD, **Dissertation title:** Algorithms and tools for computational analysis of human transcriptome using RNA-Seq, 2009-2014.
4. **Thair Judeh**, MS & PhD, **Dissertation title:** TEAK, a software suite for biological network reconstruction, partition, and query, 2010-2014.
5. **Lipi R. Acharya**, PhD, **Dissertation title**: Multivariate models and algorithms for systems biology, 2008-2011.
6. **Jingwei Zhang,** MS**, Dissertation title:** Factorization machine for sentiment analysis, 2016-2017.

7. **Milad Zafar Nezhad**, MS & PhD, **Dissertation title:** Deep learning approaches to precision medicine, 2016-2017.
8. **Mohammad Hessam Olya**, MS**, Dissertation title:** Multi-criteria optimization approaches to precision medicine, 2016-2018.
9. **Kristen Johnson**, MS, **Dissertation title:** Software for estimation of human transcriptome isoform expression using RNA-Seq data, 2010-2012.
10. **Guorong Xu**, MS, **Dissertation title**: Computational pipeline for human transcriptome quantification using RNA-Seq data, 2008-2011.
11. **Narjes S. Movahedi**, PhD, **Dissertation title:** *De novo* co-assembly of bacterial genomes from multiple single cells, 2014-2016.
12. **Patrick Trahan**, MS, **Dissertation title:** Classification of carpiodes using Fourier descriptors: a content-based image retrieval approach, 2008-2009.
13. **Sichu Li**, MS, **Dissertation title:** Application of machine learning techniques for real-time classification of sensor array data, 2008-2009.
14. **Najibesadat Sadatijafarkalaei,** MS, **Dissertation title:** Explorative analysis of feature learning methods from EHR data, 2017 – 2019.
15. **Xue Zhang,** MS, **Dissertation title:** Quantile normalization for training deep neural networks, 2017 - 2019**.**
16. **Lu Wang**, PhD, **Dissertation title**: Learning from heterogeneous data, 2014-2019.
17. **Xiangrui Li**, PhD, **Dissertation title**: Improving predictive modeling via effective feature selection and representation learning, 2015-2020.
18. **Deng Pan,** PhD, **Dissertation title**: Interpretable Machine Learning and Applications, 2015-2022.
19. **Xin Li,** PhD, Doctoral, **Dissertation title**: Adversarial Machine Learning for Advanced Medical Imaging Systems. 2016-2022.
20. **Yao Qiang (ongoing)**, Doctoral, **Dissertation title**: Trustworthy representation learning and applications.
21. **Chengyin Li (ongoing)**, Doctoral, **Dissertation title**: Trustworthy machine learning for medical imaging analysis.
22. **Ujunwa Mgboh (ongoing)**, Doctoral, **Dissertation title**: AI-assist medical imaging segmentation and analysis for treatment planning.
23. **Supriya Tumkur Suresh Kumar (ongoing),** MS, **Dissertation title:** Predictive analytics for longitudinal EHR data.
24. **Harrison Lavins (ongoing),** MS, **Dissertation title:** Trustworthy intelligent control and applications

Awards and fellowships to my students:

1. **Department Travel Awards for Outstanding Conference Publications** to Xiangrui Li ($1500), 2019, Deng Pan ($1500), 2020, Xin Li ($1500), 2021, Qiang Yao ($1500), 2022.
2. IJCNN-2022 **Conference Travel Award** to Qiang Yao ($1000)
3. **Olbrot Travel Award** ($500) to Xiangrui Li, 2019
4. **Ralph H. Kummler Award for Distinguished Achievement in Graduate Student Research** to Lu Wang (Honorable mentions), 2018
5. **GRA competition winner** to Lu Wang, 2017
6. **Outstanding GRA Award** to Xiangrui Li, 2016
7. **Summer Doctoral Dissertation Fellowship** ($5000) to Nan Deng, 2014
8. **National Science Foundation Travel Fellowship** ($800) to Yuliang Geng, 2014
9. **General Motor Award** ($1000) to Nan Deng, 2013
10. **Olbrot Travel Award** ($500) to Nan Deng, 2013
11. **Michael Conrad Award** ($1000) to Thair Judeh, 2013
12. **National Science Foundation Travel Fellowship** ($500) to Nan Deng, 2013
13. **National Science Foundation Travel Fellowship** ($500) to Tin Nguyen, 2013
14. **National Science Foundation Travel Fellowship** ($1000) to Thair Judeh, 2012
15. **Outstanding GRA Award** to Nan Deng, 2012

As the dissertation committee member:

Ph.D. dissertation committee member
Sidi Lu, PhD candidate 2018-present
Marcus Randolph, PhD candidate 2020-present
Artem Komarichev, PhD candidate 2016- present
Hajar Emami Gohari, PhD candidate 2016-present
Fedor Nikolaev, PhD 2021
Parinaz Farajiparvar, PhD 2020
Saied Ziae Mousavi Mojab, PhD 2020
Najibesadat Sadatijafarkalaei, PhD 2020
Zhengyu Ning, PhD 2020
Yibin Wang, PhD 2019
Mehedi Hasan, PhD 2019
Saeid Balaneshinkordan, PhD 2019
Shixin Chen, PhD 2018
Haotian Xu, PhD 2018
Jie Cao, PhD 2018
Yan Li, PhD 2016
Tarik Khalid Alafif, PhD 2016
Bhanukiran Vinzamuri, PhD 2016
Fayez Khazalah, PhD 2015
Omar Odibat, PhD 2013
Zhangsheng Duan, PhD 2010
Zuliang Jiang, PhD 2009
Carl Baribault, PhD 2009

Zhiyu (Sylvia) Zhao, PhD 2009

Ph.D. qualifying exam committee member
Ren Zhong, 2021
Tien Son Dang, 2021
Soumyanil Banerjee 2020
Hongsen Xin 2020
Guoli Yang 2019
Zhenyu Ning 2017
Fedor Nikolaev 2016
Hajar Emami Gohari 2016
Saeid Balaneshinkordan 2016
Md Mehedi Hasan 2016
Shixing Chen 2015
Jing Yu 2015
Haotian Xu 2015
Corey Tessler 2014
Yan Li 2014
Jingwen Zhang 2013
Rajiur Rahman 2013
Bhanukiran Vinzamuri 2013
Rajul Anand Lnu 2013
Zeyad Haliat 2013
Dong Ruan 2012
Andrey Kashlev 2012
Christina Mitrea 2012
Jie Zhou 2010
Murat Eren 2010
Zuliang Jiang 2009
Carl Baribault 2009
Zhangsheng Duan 2009
Zhiyu (Sylvia) Zhao 2008

Master's thesis committee member
Najibesadat Sadatijafarkalaei, PhD 2020
Mohammad Hessam Olya 2018
Jie Cao 2015
Narjes Sadat Movahedi 2014
Zhe Sun 2014
Yan Li 2014
David Colon 2013
Hang Zhang 2009
Daming Lu 2009

Undergraduate student mentoring
Brian Atiyeh 2017-2018

Aron Wilcock 2015
Rafael Ramos 2014
Zeyad Abed 2010-2011
Peiran Xu 2010-2011

E. Course of Curriculum Development

1. New MS program in AI Artificial Intelligence (AI): I served as a Co-Director on the recently approved MSAI program to launch in Fall 2022. The program is cross-listed among Computer Science, Electrical Engineering and Industrial/System Engineering.
2. New computer science MS program concentration on Artificial Intelligence (AI): I lead the effort of developing the curriculum and advertising the new AI concentration with the graduate committee. It is finally approved and will launch in Fall 2020. The current master students may also elect to transfer to this AI concentration.
3. New computer science MS program concentration on Mobility: I lead the effort of developing the curriculum and advertising the new mobility concentration with the graduate committee. It is finally approved and will launch in Fall 2020. The current master students may also elect to transfer to this AI concentration.
4. Restructuring computer science MS program: breadth requirement (at least one course from each of the three groups: theory, systems, and intelligence) and depth requirement (Autonomous Driving, Artificial Intelligence, and more in the future).
5. Reinstate course CSC 8800 Seminar Machine Learning and AI: This course offers a unique opportunity to survey an array of machine learning and AI topics for computer vision, pattern recognition and natural language processing. It is approved to be reinstated in 2020.
6. CSC 8860: “Seminar Topics in Computer Vision and Pattern Recognition” has been re-designed with deep learning topics and applications images, text analytics, and offered in Fall 2017.
7. CSC 5825: “Introduction to Machine Learning and Applications” has been offered in Winter, Fall 2017 and annually through Fall 2020 with 40+ enrollment.
8. CSC 5991: “Special Topics in Computer Science: Introduction to Machine Learning and Applications” and offered it in Fall 2012, Fall 2013 and Winter 2014 at WSU.
9. CSC 7825: “Machine Leaning” and offered it in Fall 2014 and re-designed in Winter 2019 and offered annually through Fall 2020 with 40+ enrollment.

F. Course Materials (Unpublished)

1. CSC 8800 (Seminar in Machine Learning and AI): presentation slides on new AI topics
2. CSC 5825 (Intro. to Machine Learning and Applications): presentation slides, problem sets and coding examples.
3. CSC 7825 (Machine Learning): presentation slides, problem sets and coding examples.
4. CSCI 6635 (Pattern Recognition): presentation slides, problem sets and coding examples.
5. CSCI 4632(G) (Principles of Image Processing), problem sets and coding examples.
6. CSCI 6587: (Advanced Machine Learning for Bioinformatics), presentation slides, problem sets and coding examples.

II. RESEARCH

A. Research in Progress, Not Funded

In progress

MPI	NIH R33HD105610 Severity Predictors Integrating salivary Transcriptomics and proteomics with Multi neural network Intelligence in SARS-CoV2 infection in Children (SPITS MISC)	01/01/2023 – 12/31/2025	$2,000,000
Co-PI	NSF 2243852: NRT: SEAS-M: Transformative Research and Training in Safe, Equitable, Accessible, and Sustainable Mobility	50/01/2023-04/30/2028	$2,999,602
Co-PI	NSF 2229815: Theme 5: AI Institute for Building Machine-Human Co-Inspired Trustworthy Intelligence	06/01/2023-05/31/2028	$19,998,818
Co-PI	NSF 2235225: Convergence Accelerator Track H: Leveraging Human-Centered AI Microtransit to Ameliorate Spatiotemporal Mismatch between Housing and Employment for Persons with Disabilities	01/01/2023-09/30/2023	$613,621
Co-PI	NSF 2231886: SCC-PG: Smart Lights, Vibrant City: Data-Driven Human-IoT Lighting Networks to Improve Safety and Revitalize Downtown Areas	01/01/2023 – 12/31/2023	$150,000
Co-PI	Department of Transportation:	11/15/2022 – 11/14/2027	$1,498,407

	Center for Advanced Multimodal Transportation for Economic Strength (AMTES Center)		
PI	Moderna Inc./Fluidda Inc. Mobile CT based Covid screening technology and software app. (Invention Disclosure Filed with WSU Tech Commercialization Office **ID 22-1685**)	01/01/2023 – 12/31/24	$200,000

Not funded

1. NSF 2204809: Collaborative Research: SCH: Learning social tracts to ensure geo-social fairness for reducing cardiovascular health disparities 10/01/2022-09/30/2026 $1,200,000 (PI)
2. NSF 2202384: Student Exploration and Expert Knowledge (SEEK) App: An Urban Science Drive (USD) 10/01/2022-09/30/2025 $850,000 (Co-PI)
3. NSF 2210039: EAGER: DCL: SaTC: Enabling Interdisciplinary Collaboration: User Authentication and Intervention Against Deepfakes with Online-to-Offline Risks 10/01/2022-09/30/2024 $300,000 (Co-PI)
4. NSF 2200020: PIPP Phase I: Multi-modal and multi-scale predictive intelligence for event-based outbreak surveillance and community-aware intervention 10/01/2022-03/01/2023, $1,000,000 (PI)
5. NSF 2126019: CC* Planning: Enabling Real-time and Scalable Campus Traffic Flow Monitoring and Management with Tiny AI 10/01/2021-09/30/2022 $99,855 (Co-PI)
6. NIH: OTA-21-015B: Integrating Heart rate variability and Omics using Multi Neural Network Intelligence for Early Recognition of long term cardiovascUlar and Neurocognitive outcomes of COVID-19 in children. 05/01/2021 – 04/30/2025 $2,075,628 (MPI with Sethuraman (MCH) and Hicks (Penn State))
7. NSF 2123644: IIS: SCH: Reducing Hypertension Disparities Through Trustworthy Artificial Intelligence. 10/01/2021-09/30/2025 $1,199,822 (PI).

8. NSF 2133175: SCC-CIVIC-FA Track A: Leveraging Human-Centered AI and Microtransit to Ameliorate Spatiotemporal Mismatch between Housing and Employment. 10/01/2021-09/30/2022 $999,364 (PI)
9. NSF 2123073: SaTC: CORE: Small: Robust and Explainable Representation Learning Algorithms for Detecting Cyberattacks with Guaranteed Error Control. 10/01/2021-09/30/2025 $499,999 (PI)
10. NSF 2106532 III: Medium: Privacy-aware debiasing to ensure group, individual and social fairness. 10/01/2021-09/30/2025. $1,199,994 (PI).
11. NSF 2118233: ASCENT Preproposal: Synchronizing Integrated Human-IoT Smart Community Lighting with Population Health, Public Safety and Power Grid Management 10/01/2021-09/30/2025. $1,500,000 (Co-PI).
12. NSF 1939385 FAI: Democratization or exclusion? A systematic learning-to-debiasing approach. 01/01/2020 – 12/31/2022, $1,250,000 (PI).
13. NIH R21 EB 031924 COVID-MobileXpert, a mobile AI app for COVID-19 patient management using chest x-rays 07/01/2021-06/30/2023, $420,000 (PI).
14. NSF 2020109: AI Institute: Planning: Rethinking and redefining social determinants of health for promoting community health in AI era. $499,964 (PI).
15. NSF/CISE: IIS 2006940: III: Small: Fair and interpretable feature learning to enable trustworthy AI. $499,793 (PI).
16. NSF/BIOSENS-Biosensing 2037409: SenSE: Temporally Resolved Acquisition and Contextual Evaluation (TRACE): An AI-enabled multiparameter wearable sensor for continuous vigilance of COVID-19. $749,687 (Co-PI).
17. NSF/ASCENT 2023645: ASCENT: Integrated Human-IoT System in Smart Lighting Network to Improve Wellness and Public Safety in University Campuses. 09/01/2020 – 08/31/2024. $1,500,000 (Co-PI).
18. NSF/CISE: IIS 1915595: SCH: INT: Reducing Hypertension Disparities through Trustworthy Artificial Intelligence. National Science Foundation. 09/01/2019 – 08/31/2023. $1,199,880 (PI).
19. NIH 1 R01 MD016024-01: Early Intervention in Racially and Ethnically Diverse Mothers with Postpartum Depression. $2,499,995 (Co-I with PI Sid Tan).
20. NIH 1 R01MD642049-01: The PERVASIVE Project – Pairing GEocoded Social DeteRminants of Health and Visual Analytics to Improve CardioVascular Equity. $3,500,000 (MPI with Miller, HFHS)
21. NIH R18HS027358-01 Advanced Analytics to Improve Cardiovascular Health in Detroit 10/01/2020 – 12/31/2022 $1,331,883 (MPI with Miller, HFHS)

22. NIH/1 R01 MD014857-01: Fairness-aware predictive modeling techniques for reducing health disparities. National Institutes of Health. 09/01/2019 – 08/31/2023. $1,456,869 (PI).
23. NSF/CISE: IIS: SCH: INT: Health in a Community Context: Integrating neighborhood, health system, and individual smart device data to design precision and cost-effective health interventions. National Science Foundation. 09/01/2019 – 08/31/2023. $1,199,880 (PI).
24. Michigan Health Endowment Fund: Heart2Heart (H2H): a free community-aware and person-centered chatbot app for seniors to maintain a healthy blood pressure. 06/01/2019 – 05/31/2021. $100,000 (PI).
25. NSF/CISE: IIS: HDR Ideas Labs: Fairness-aware Data Science Approaches to Reduce Health Disparities. National Science Foundation. Preliminary Proposal (PI).
26. George CTSA Social Isolation and psychosocial correlates of emergency department (ED) visits and hospital readmissions among heart failure (HF) patients seen in the ED (Consultant).
27. American Heart Association: Multi-task Deep Learning for Predicting CVS Phenotypes. 09/01/2018-08/30/2020, $250,000 (PI)
28. NIH/1 U54 MD012526-01: Metropolitan Detroit Specialized Center of Excellence for African American Cancer Survivorship. $4,749,222 (Co-I)
29. American Heart Association: Deep Learning - Novel Medical Concepts from ComplexCardiovascular Phenotypes. 05/01/2017-04/30/2018, $500,000 + $125,000 AWS Credit (PI)
30. NSF/CISE: IIS: Small: Model-based Approaches to Detect Imbalanced and Overlapping Clusters. 09/01/2017-08/31/2020, $500,000 (PI)
31. The Mood Challenge for ResearchKit: Moodlink. 09/01/2016-08/31/2018, $200,000 (Co-PI)
32. NSF/CISE: III: Small: Detecting Imbalanced and Overlapping Clusters from Multiple Types of Unlabeled Data. 09/01/2016-08/31/2019, $500,000 (PI)
33. NIH/NHLBI: Combining RNA-seq with Cryobiopsy to Provide a Biomarker for Pulmonary Fibrosis. 10/01/2015 – 09/30/2018, $337,982 (PI, multiple PI's).
34. NIH P01: Comprehensive Transcriptome Studies Using RNA-seq for Male Osteoporosis. 07/01/2015 – 06/30/2020, $87,967 (Co-I).
35. NSF/CCF: Novel technologies for features extraction from DNA reads. 09/01/2015 – 08/31/2018, $467,513 (PI).
36. NSF/ABI: ABI Development: Informatics Tools for Dissection of Non-Model Transcriptomes. 05/01/2015 – 04/30/2018, $473,402 (PI).

37. NIH R34: Kansas University Alzheimer's Basic and Clinical Systems Pharmacology Center. 09/30/2014 – 09/29/2015, $60,000 (Co-I).
38. NIH: Early-life Stress, CCKR-2, and Post-ELS Psychopathologies. 09/01/2014 – 08/31/2019, $112,381 (Co-I).
39. NIH: Cell Signaling in *C. Albicans* Hyphal Development. 04/01/2014-03/30/2017, $150,999 (Co-I)
40. NSF/CCF: A Novel Algorithmic Framework for Discovering Subnetworks From Big Biological Data. 07/01/2014-06/30/2017, $339,354 (PI)
41. NIH/NLM: Identification of Transcription Changes and Mechanistic Biomarkers in Human Disease. 05/01/2014 – 04/30/2018, $1,388,086 (PI).
42. NSF: CAREER: Computational Methods for Mechanistic Analyses of Transcriptome Changes, 07/2013 – 06/2018, $524,412 (PI).
43. NSF/IIS: Small: A Joint Probabilistic Modeling Framework for Discriminant Analysis of Deep Sequencing Reads with Applications to Metagenomics. 06/2013 – 05/2016, $ 434,118 (PI).
44. NIH/NIGMS: Computational Methods for the Analysis of Biological Subpathways and Crosstalk. 10/01/2013 – 09/30/2018, $1,886,259 (PI).
45. NIH/NHGRI: Integrated Feature Extraction for Binning Short Reads with Applications to Metagenomics and Transcriptomics. 03/01/2013 – 02/29/2015, $435,563 (PI).
46. NSF BIGDATA: Automatic Transcriptome Reconstruction in Non-Model Organisms. $500,000 (PI).
47. NSF: CAREER: Automatic Extraction of Signaling Pathways from Integrated Data, 07/2013 – 06/2018, $437,432 (PI).
48. NSF: CAREER: *De Novo* Signaling Pathway Reconstruction from Multiple Data Sources, 07/2012 – 06/2017, $536,128 (PI).
49. NSF: Innovative Signal Processing Algorithms for Inference of Gene Regulatory Networks. 07/2010 – 06/2013, $322,492 (PI).
50. NSF: Gene Clustering and Networking Methods and Tools for Replicated Molecular Profiling Data. 07/2010 – 06/2013, $397,196 (PI).
51. NIH: Correlation-based Pattern Discovery Methods and Software Tools for Replicated Molecular Profiling Data. 05/2010 – 04/2012, ~$400,000 (PI).
52. NIH: Gene Modeling of Structural Variations using RNA-seq. 05/2011 – 04/2013, ~$400,000 (PI).
53. NIH: Information Pipeline for Identification and Quantification of Human Transcriptome. 05/2011 – 04/2015, ~$1,400,000 (PI).

54. NIH: Reconstruction of Cancer Signaling Pathways from Informed Source Separation. 05/2011- 04/2012, ~530,000 (PI).
55. Ladies Leukemia League: Biomarker Discovery in Leukemia. 05/2010 – 04/2011, $35,000 (PI).
56. WSU: PRE program. Bioinformatics Analysis to Identify Biomarkers of Pregnancy Disorders. 06/01/2013 – 11/30/2014, $140,000 (PI).
57. Complete Genomics Inc. Cancer Genomics Grant. $30,000 (PI).

B. Funded Research (over **3.0 million** NSF and NIH research grants **post-tenure** where I am the PI (NSF) or MPI (NIH) on over **1.7 million**)

Post-Tenure Funded Grants

1. NSF: IIS 2211897: *Collaborative Research: HCC: Small: Understanding Online-to-Offline Sexual Violence through Data Donation from Users*. 10/01/2022 – 09/30/2025, **$600,000**, **PI**, **33% share**.
2. NSF: CNS 2043611: *SCC-CIVIC-PG Track A: Leveraging AI-assist Microtransit to Ameliorate Spatiotemporal Mismatch between Housing and Employment*. 01/15/2021 - 12/31/2021, **$49,898, PI, 25% share**.
3. NIH R61HD105610: *Severity Predictors Integrating salivary Transcriptomics and proteomics with Multi neural network Intelligence in SARS-CoV2 infection in Children (SPITS MISC)*, 01/01/2021 - 12/31/2023, **$1,433,469**, **MPI**, **33% share**.
4. NSF/IIS 1724227 *S&AS:INT: Autonomous Battery Operating System (ABOS): An Adaptive & Comprehensive Approach to Efficient, Safe, & Secure Battery System Management*. 09/01/2017-08/31/2021, **$1,249,998**, **Senior Personnel**, **10% share**.
5. NSF/CCF 1637312: *S&CC: Promoting a Healthier Urban Community: Prioritization of Risk Factors for the Prevention and Treatment of Pediatric Obesity*. 09/01/2016 – 08/31/2018, **$200,000**, **Co-PI, 33% share**.
6. Henry Ford Health Science: AI approaches to estimate uncertainties in adaptive radiotherapy of lung cancer. GRA Support for Ujunwa Mgboh (female and minority CS PhD student). 08/18/2021 - 08/17/2025, **$220,000**, **PI, 100% share**.
7. Henry Ford Health Science: Uncertainty in Segmentation of 3D CT images of Prostate Cancer Patients. GRA Support for Xin Li (Graduated CS PhD student) and Chengyin Li (CS PhD candidate). 01/01/2021 - 05/31/2023, **$90,000**, **PI, 100% share**.
8. DTE E-Challenge: Energy Conservation Measure for Michigan Universities, 01/2022 – 12/2023, **$200,000, Co-PI, 33% share**.

Pre-Tenure Funded Grants:

9. NSF/CCF: EAGER: A Novel Algorithmic Framework for Discovering Subnetworks from Big Biological Data. 09/01/2014-08/30/2017, **$174,989** (PI).
10. NIH/NEI: Genetics of Refractive Error Development in the Mouse Model. 10/01/2014 – 09/30/2018, **$45,000** out of $1,309,040 total amount (role, co-I). Recommended.
11. NIH/NLM: A New Informatics Paradigm for Reconstructing Signaling Pathways in Human Disease. 09/2009 – 08/2012, **$409,531** (PI).
12. NIH/NLM: Summer Research Supplement. 06/2010 – 08/2011, **$90,292** (PI).
13. NSF (EPSCoR): Jointly Analysis of Differential Splicing and Differential Expression using RNA-seq. 05/2011 – 04/2012, **$10,000** (role, PI, declined due to move to WSU).
14. NSF/CCF: CPATH-1: Collaborative Research: a Verification-driven Learning Model that Enriches CS and Related Undergraduate Programs. 09/2009 – 08/2012, **$253,798** (co-PI), 25% share.
15. Louisiana Optical Network Initiative (LONI): LONI Graduate Fellowship Program. 08/2010 – 08/2012, **$48,934** (PI).
16. Tulane Health Sciences Center: Biomarker Discovery for Lung Diseases using High Throughput Data. 07/10 – 06/2011, **$24,456** (PI).
17. Tulane Health Science Center: MicroRNA Target Prediction using RNA-seq. Tulane Health Sciences Center, 07/10 – 06/2011, **$35,000** (PI).
18. Xavier University of Louisiana: Computational Approaches to miRNA Target Prediction. 05/2011 – 04/2012, **$28,800** (PI).
19. Research Institute for Children of New Orleans: Professional Service Agreement. 01/2008 – 08/2011, **$80,000** (PI).
20. NIH/NCI: Analysis of Epstein Barr Virus type III latency on Cellular miRNA Gene Expression. 06/2009 – 09/2010, $219,187 (co-I), 33% share.

III. PUBLICATION

A. Scholarly Books Published: none.

B. **Chapters Published** (my student as the first author is underlined)

1. Acharya, L.R. and **Zhu, D.**: Gene-Set based inference of biological network topologies from big molecular profiling data. In a chapter of the book “Big Data over Networks”. Cambridge University Press, 2016
2. Acharya, L.R. and **Zhu, D.**: "Multivariate models and algorithms for learning from replicated molecular profiling data. In a chapter of the book “Bioengineering”. InTech Publisher, 2011
3. Acharya, L.R., Judeh, T, **Zhu, D.**: A survey of computational approaches to biological network reconstruction and partition. In a chapter of the book “Machine Learning Approach for Network Analysis: Novel Graph Classes for Classification Techniques”. Wiley Publisher, 2011

4. Chen, H, Zhao, Z, Zhang, K and **Zhu, D.**: New aspects of haplotype inference from SNP fragments. In a chapter of the book "A Practical Guide to Bioinformatics Analysis". iConcept, 2010

5. Li, H and **Zhu, D.**: Generalized analysis of variance (ANOVA) models for analyzing oligonucleotide microarray data analysis. In a chapter of the book "Oligonucleotide Array Sequence Analysis", Nova Publisher, New York, 2008

6. **Zhu, D.**, Dequeant, M.L., Li, H. Comparative analysis of distance based clustering methods. In a chapter of the book "Analysis of Microarray Data: A Network based Approach", Wiley-VCH, Weinheim, Germany, 2007

7. **Zhu, D.**, Rabbat, M.G., Hero, A.O., Nowak, R. and Figueiredo. De Novo reconstructing signaling pathways from multiple data sources. In a chapter of the book "New Research in Signaling Transduction", Nova Publisher, New York, 2006

C. Editorships of Books/Proceedings

1. Lead guest editor: Computational Network Biology, a special issue for EURASIP Journal on Systems Biology and Bioinformatics. 2016 (with Tamer Kahveci at University of Florida)

2. Editor: Proceedings of the First, Second and Third Workshops on Data Mining of Next-generation Sequencing in Conjunction with BIBM conferences. 2014 (with Steve Qin at Emory University)

3. Editor: BIOKDD 2014 Workshop Proceeding (with Janga Sarath at IUPUI)

4. Editor: Proceedings of the First and Second Workshops on Next-Generation Sequencing in Conjunction with ICIBM conferences. (with Kun Huang at Ohio State University)

B. Journal Articles Published

Refereed Journals (**my student** as the **first author** is underlined)

1. Li, X, Bagher, HE, Kim, J, **Zhu, D**, and Chetty, I. (2022) An uncertainty-aware deep learning architecture with outlier mitigation for prostate gland segmentation in radiotherapy treatment planning. *Medical Physics*, https://doi.org/10.1002/mp.15982
2. Li, C, Sullivan, R, **Zhu, D**, and Hick, S. (2022) Putting the 'mi' in omics: discovering miRNA biomarkers for pediatric precision care. *Pediatrics Research*, https://doi.org/10.1038/s41390-022-02206-5
3. Harrison, NE, Meram, S, Li, X, Medado, P, White, MB, Henry, S, Gupta, S, **Zhu, D**, Pang, P, Levy, P. (2022) Hemodynamic profiles by non-invasive monitoring of cardiac index and vascular tone in acute heart failure patients in the emergency department: external validation and clinical outcomes. *Plos One*, DOI: 10.1371/journal.pone.0265895

4. Wang, L. and **Zhu, D.** (2021). Tackling multiple ordinal regression problems: sparse and deep multi-task learning approaches. *Data Mining and Knowledge Discovery (DMKD)*, 35, 1134-1161.
5. Manwar, R., Li, X., Mahmoodkalayeh, S., Asano, E., **Zhu, D.** and Avanaki, K., 2020. Deep learning protocol for improved photoacoustic brain imaging. *Journal of biophotonics*, 13(10), p.e202000212.
6. Korzeniewski, S.J., Bezold, C., Carbone, J.T., Danagoulian, S., Foster, B., Misra, D., El-Masri, M.M., **Zhu, D.**, Welch, R., Meloche, L. and Hill, A.B., 2020. The Population Health OutcomEs aNd Information Exchange (PHOENIX) Program-A Transformative Approach to Reduce the Burden of Chronic Disease. *Online Journal of Public Health Informatics*, 12(1).
7. MZ Nezhad, N Sadati, K Yang, **D Zhu** (2019). A Deep Active Survival Analysis approach for precision treatment recommendations: Application of prostate cancer. *Expert Systems with Applications* 115, 16-26.
8. X Li, **D Zhu**, P Levy (2018). Leveraging auxiliary measures: a deep multi-task neural network for predictive modeling in clinical research. *BMC medical informatics and decision making* 18 (4), 126.
9. S Chen, M Dong, **D Zhu** (2018). Learning and Interpreting Features to Rank: A Case Study on Age Estimation. *International Journal of Multimedia Data Engineering and Management (IJMDEM)*, 9(3) 17-36.
10. J Zheng, L Gao, H Zhang, **D Zhu**, H Wang, Q Gao, VCM Leung (2018). Joint Energy Management and Interference Coordination With Max-Min Fairness in Ultra-Dense HetNets. *IEEE Access* 6, 32588-32600.
11. Li, X and **Zhu, D** (2018) Robust feature selection via l2,1-norm in finite mixture of regression. *Pattern Recognition Letters*, vol 101, Jan. 2018, pp 37-43, in press.
12. Wang, L, **Zhu, D** and Dong, M (2018) Clustering over-dispersed data with mixed feature types. *Statistical Analysis and Data mining*, https://doi.org/10.1002/sam.11369.
13. Li, X, **Zhu, D** and Dong, M (2018) Multinomial classification with class-conditional overlapping sparse feature groups. *Pattern Recognition Letters*, vol 101, Jan. 2018, pp 37-43.
14. Wang, L, Acharya, L, Bai, C and **Zhu, D** (2017) Transcriptome assembly strategies for precision medicine. Quantitative Biology, pp 1-11, https://doi.org/10.1007/s40484-017-0109-2.
15. Almomani, R, Dong, M and **Zhu, D** (2016) Object Tracking via Dirichlet Process-based Appearance Models. *Neural Computing and Applications.* DOI: 10.1007/s00521-016-2280-1.

16. Acharya, LR., Reynolds, R and **Zhu, D** (2015) Network inference through synergistic subnetwork evolution. *EURASIP Journal on Bioinformatics and Systems Biology*, Nov 27;2015(1):12.

17. Hou, J, Acharya, L, **Zhu, D** and Cheng, J. (2015) An overview of bioinformatics methods for modeling biological pathways in yeast. *Briefings in Functional Genomics*, doi:10.1093/bfgp/elv040.

18. Wang, G, Liu, Y, **Zhu, D**, Klau, G and Feng, W. (2015) Bioinformatics methods and biological interpretation for next-generation sequencing data. Editorial. *Biomed Research International*, Editorial. Volume 2015, Article ID 690873.

19. Janga, SC., **Zhu, D.**, Chen, JY. and Zaki, MJ. (2015) Knowledge discovery using big data in biomedical systems. *IEEE/ACM Transaction on Computational Biology and Bioinformatics (TCBB)*, Editorial, VOL. 12, NO. 4, JULY/AUGUST 2015.

20. **Zhu, D**, Deng, N, and Bai C. (2014) A generalized dSpliceType framework to detect differential splicing and different expression events using RNA-Seq. *IEEE Transaction on NanoBioScience*. DOI: 10.1109/TNB.2015.2388593.

21. Deng, N, Sanchez, C, Lasky, J, **Zhu, D**. (2013) Detecting splicing variants from non-differentially expressed genes of human idiopathic pulmoary fibrosis. *PLoS One* 8(7):e68352. doi:10.137/journal.pone.0068352.

22. Judeh, T, Johnson, C, Kumar, A, **Zhu, D** (2013) TEAK: Topological Enrichment Analysis frameworK for detecting activated biological subpathways. *Nucleic Acids Res., doi: 10.1093/nar/gks1299*.

23. Acharya, L, Judeh, T, Wang, G, **Zhu, D**. (2012) Optimal structural inference of signaling pathways from overlapping and unordered gene sets. *Bioinformatics*, doi 10.1093/bioinformatics/btr696, 28(4), 546-556.

24. Zhang, W, Edward, A, **Zhu, D**, Flemington, E, Deininger and Zhang, K. (2012). miRNA-Mediated relationships between Cis-SNP genotypes and transcript intensities in lymphocyte cell lines. *PLoS ONE*, 7(2), e31429.

25. Acharya, L, Judeh, T, Duan, Z, Rabbat, M, **Zhu, D**. (2011) GSGS: A computational framework for reconstructing signaling pathways from gene sets. *IEEE/ACM Transaction on Computational Biology and Bioinformatics (TCBB), 9(2), 438-450.*

26. Deng N, Puetter, A, Zhang, K, Johnson, K., Zhao, Z, Taylor, C, Flemington, E and **Zhu, D**. (2011) Isoform-level microRNA-155 Target Prediction using RNA-seq. *Nucleic Acids Res., doi: 10.1093/nar/gkr042*.

27. Xu G, Deng N, Zhao, Z, Flemington EK, **Zhu, D**. (2011) SAMMate: A GUI tool for processing short read alignment information in SAM/BAM format. *Source Code for Biology and Medicine*, 6:2.

28. **Zhu, D**, Acharya, L, Zhang, H. (2011) A generalized multivariate approach to pattern discovery from replicated and incomplete genome-wide measurements. *IEEE/ACM Transaction on Computational Biology and Bioinformatics (TCBB)*, 8(5), pp1153-1169.

29. Xu G, Fewell C, Taylor C, Deng N, Hedges D, Wang X, Zhang K, Lacey M, Zhang H, Yin Q, Cameron J, Lin Z, **Zhu, D**, Flemington EK. (2010) Quantitative and qualitative RNA-seq based evaluation of Epstein-Barr virus transcription in type I latency Burkitt's Lymphoma cell. *RNA*, 16(8): 1610-1622.

30. Zheng, L, Xu G, Taylor C, **Zhu, D**, Flemington EK*. (2010) Analysis of EBV transcriptome using RNA-seq. *J. Virology*, doi:10.1128/JVI.01521-10.

31. Zhang, W, Edwards, A., Fan, W., **Zhu, D**., Zhang, K*. (2010) SvdPPCS: An effective singular value decomposition-based method for conserved and divergent co-expression gene module identification, *BMC Bioinformatics* 11, art. no. 338.

32. **Zhu, D**., Li, H. (2010) Improved Bayesian Network inference using relaxed gene ordering. *International Journal of Data Mining and Bioinformatics* 4 (1), pp. 44-59

33. **Zhu, D**. 2009. Semi-supervised gene shaving method for predicting low variation biological pathways from genome-wide data. *BMC Bioinformatics*, 10(suppl):S54.

34. Zhang, K., Fan, W., Deininger, P., Edwards, A., Xu, Z., **Zhu, D**. 2009. Breaking the computational barrier: A divide-conquer and aggregate based approach for Alu insertion site characterisation. *International Journal of Computational Biology and Drug Design* 2 (4), pp. 302-322.

35. Li, H, **Zhu, D** and Cook, M. 2008. A statistical framework for consolidating "sibling" probe sets for Affymetrix GeneChip data. *BMC Genomics*, 9:188.

36. **Zhu, D**., Hero, A.O. 2007. Bayesian hierarchical model for large-scale covariance matrix estimation. *J. Comput. Biol.*, 14(10), 1311-1326.

37. **Zhu, D**., Li, Y. and Li, H. 2007. Multivariate correlation estimator for inferring functional relationships from replicated genome-wide data. *Bioinformatics*, 23(17), 2298-2305.

38. **Zhu, D**., Hero, A.O., Cheng, H, Khanna, R and Swaroop, A. 2005. Network constrained clustering for gene microarray data. *Bioinformatics*, 21(210, 4014-4020.

39. **Zhu, D**., Qin, Z.S. 2005. Structural comparison of metabolic networks in selected single cell organisms. *BMC Bioinformatics*, 6:8.

40. **Zhu, D**., Hero, A.O., Qin, Z.S and Swaroop, A. 2005. High throughput screening of co-expressed gene pairs with controlled False Discovery Rate (FDR) and Minimum Acceptable Strength (MAS). *J. Comput Biol*,12(7), 1027-1043.

41. Camahort, R., Shivaraju, M., Mattingly, M., Li, B., Nakanishi, S., **Zhu, D.**,Shilatifard, A., (...), Gerton, J.L. (2009) Cse4 Is Part of an Octameric Nucleosome in Budding Yeast . *Molecular Cell* 35 (6), pp. 794-805

42. Pan, L., Chen, S., Weng, C., Call, G., **Zhu, D.**, Tang, H., Zhang, N., Xie, T. (2007) Stem Cell Aging Is Controlled Both Intrinsically and Extrinsically in the Drosophila Ovary . *Cell Stem Cell* 1 (4), pp. 458-469

43. Paoletti, A.C., Parmely, T.J., Tomomori-Sato, C., Sato, S., **Zhu, D.**, Conaway, R.C., Conaway, J.W., (...), Washburn, M.P. (2006) Quantitative proteomic analysis of distinct mammalian Mediator complexes using normalized spectral abundance factors. *Proceedings of the National Academy of Sciences of the United States of America* 103 (50), pp. 18928-18933

44. Akimoto, M., Cheng, H., **Zhu, D.**, Brzezinski, J.A., Khanna, R., Filippova, E.,Oh, E.C.T., (...), Swaroop, A. (2006) Targeting of GFP to newborn rods by Nrl promoter and temporal expression profiling of flow-sorted photoreceptors. *Proceedings of the National Academy of Sciences of the United States of America* 103 (10), pp. 3890-3895

Non-refereed Journals or Pre-prints

1. Li, X, Pan, D,Li, X and **Zhu, D** (2020). Regularize SGD training via aligning min-batches. arXiv:2002.09917 [cs.LG].
2. Nezhad, M.Z., **Zhu, D.**, Sadati, N. and Yang, K., 2018. A predictive approach using deep feature learning for electronic medical records: A comparative study. arXiv preprint arXiv:1801.02961.
3. Olya, M.H., **Zhu, D**. and Yang, K., 2018. Multi-task Prediction of Patient Workload. arXiv preprint arXiv:1901.00746.
4. **Zhu, D** and Qin ZS. (2014) Systems biology and metagenomics: a showcase of chinese bioinformatics researchers and their work. *Science China Life Sciences* (Editorial), v57(11), 1051-1053.
5. Nguyen, T.C., Zhao, Z, and **Zhu, D**: SPATA: A Seeding and Patching Algorithm for Hybrid Transcriptome Assembly**.** arXiv:1306.1511v1 (2013)
6. Nguyen, T.C., Deng, N, **Zhu, D**: SASeq: A Selective and Adaptive Shrinkage Approach to Detect and Quantify Active Transcripts using RNA-Seq. arXiv:1208.3619 (2012)

E. Papers Published in Conference Proceedings

Refereed Conference Papers (**my student** as the **first author** is underlined)

1. [NuerIPS-22] Qiang, Y, Pan, D, Li, C, Li, X, Jang, R, and **Zhu, D.** (2022) AttCAT: Explaining Transformers via Attentive Class Activation Tokens. To appear in the Proceedings of Thirty-sixth Conference on Neural Information Processing Systems. **Acceptance rate: 2,665/10,411 = 25%. (Tracked by CSRankings.org as a top AI conference)**

2. [ECML-22] Li, C., Dong, Z, Fisher, N, and **Zhu, D.** (2022) Coupling User Preference with External Rewards to Enable Driver-centered and Resource-aware EV Charging Recommendation. To appear in the Proceedings of European Conference on Machine

Learning and Principles and Practice of Knowledge Discovery in Databases. **Acceptance rate: 242/932 = 26%**.

3. [IJCAI-22] Qiang, Y, Li, C, Brocanelli, M, **Zhu, D.** (2022) Counterfactual Interpolation Augmentation (CIA): A Unified Approach to Enhance Fairness and Explainability of DNN. Proceedings of 31st International Joint Conference on Artificial Intelligence, Messe Wien, Vienna, Austria. **Acceptance rate: 681/4,535 = 15%**. **(Tracked by CSRankings.org as a top AI conference)**

4. [IJCNN-22] Qiang, Y., Kumar, S. T. S., Brocanelli, M., & **Zhu, D.** (2022) Tiny RNN Model with Certified Robustness for Text Classification. Proceedings of International Joint Conference on Neural Networks (Oral Presentation).

5. [IJCAI-21] Pan, D, Li, X and **Zhu, D** (2021) Explaining Deep Neural Network Models with Adversarial Gradient Integration. In the proceedings of the *30th International Joint Conference on Artificial Intelligence (IJCAI-21)*, Montreal, Canada. **Acceptance rate: 587/4,204= 13.9% (Tracked by CSRankings as a top AI conference)**.

6. [AAAI-21] Li, X, Li, X, Pan,D and **Zhu, D** (2020) Improving adversarial robustness via probabilistically compact loss with logit constraints. In the proceedings of *Thirty-Five AAAI Conference on Artificial Intelligence (AAAI-21)*, virtual conference. **Acceptance rate: 1692/7911 = 21.4% (Tracked by CSRankings as a top AI conference).**

7. [ISBI-21] Li, X., Pan, D. and **Zhu, D.**, (2021) Defending against adversarial attacks on medical imaging AI system, classification or detection? In the proceedings of *IEEE International Symposium on Biomedical Imaging (ISBI-21)*, virtual conference.

8. [BIBM-20] Li, X, Li, C., and **Zhu, D** (2020) COVID-MobileXpert: On-Device COVID-19 Screening using Snapshots of Chest X-Ray. In the proceedings of *2020 International Conference on Bioinformatics and Biomedicine (BIBM-20)*.

9. [IJCAI-20] Pan, D, Li, X, Li, X and **Zhu, D** (2020) Explainable recommendation via interpretable feature mapping and evaluating explainability. In the proceedings of 29th International Joint Conference on Artificial Intelligence (IJCAI-20), Yokohama, Japan. **Acceptance rate: 592/4717 = 12.6% (Tracked by CSRankings as a top AI conference)**

10. [IJCNN-20] Qiang, Y, Li, X and **Zhu, D** (2020) Toward tag-free aspect based sentiment analysis: a multiple attention network approach. to appear in the proceedings of *International Joint Conference on Neural Networks (IJCNN-20)*, Glasgow, Scotland, UK.

11. [AAAI-20] Li, X, Li, X, Pan, D and **Zhu, D** (2020) On the learning behavior of logistic and softmax losses for deep neural networks. In the proceeding of *Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)*, New York. Acceptance rate: 1591/7737 = **20.6% (Tracked by CSRankings as a top AI conference)**

12. [AMIA-20] Li, X, **Zhu, D** and Levy, P (2020) Predicting clinical outcomes with patient stratification via deep mixture neural networks. In the proceeding of *American Medical Informatics Association (AMIA-20) Summit on Clinical Research Informatics*, Houston. (**Best Student Paper Award**, *Corresponding Autor)

13. [ISBI-20] **Li, X**. and **Zhu, D**. (2020). Robust detection of adversarial attacks on medical images. In the proceeding of *IEEE International Symposium on Biomedical Imaging (ISBI-20),* Iowa City.
14. [ISBI-20] Li, X., Hect, J., Thompson, J. and **Zhu, D.** (2020). Interpreting age effects of human fetal brain from spontaneous fMRI using deep 3D convolutional neural networks. In the proceeding of *IEEE International Symposium on Biomedical Imaging (ISBI-20)*, Iowa City.
15. [BIBM-19] Wang, L, Dong, M, Towner, E and **Zhu, D** (2019) Prioritization of multi-level risk factors for obesity. In the proceedings of 2019 IEEE *International Conference on Bioinformatics and Biomedicine* (BIBM'19), 1065-1072.
16. [CoNEXT-18] J Ren, X Wang, J Fang, Y Feng, **D Zhu,** Z Luo, J Zheng, Z Wang (2019) Proteus: network-aware web browsing on heterogeneous mobile systems. Proceedings of the 14th International Conference on emerging Networking EXperiments and Technologies. 379-392.
17. [ICIOT-18] J Zheng, L Gao, **D Zhu**, H Wang, Q Sun, J Niu, X Li, J Yang (2018). Joint Energy-Efficient Optimization of Downlink and Uplink with eICIC in HetNet. International Conference on Internet of Things as a Service, 333-339.
18. [BHI-18] Wang, L, **Zhu, D**, Towner, E and Dong, M. Obesity risk factors ranking using multi-task learning. In the proceeding of IEEE Biomedical and Health Informatics (BHI) Conference, March, 2018, Las Vegas.
19. [ICMLA-17] Wang, L, **Zhu, D**, Li, Y and Dong, M (2017) Modeling Over-dispersion for Network Data Clustering. In the proceeding of 16th IEEE International Conference on Machine Learning and Application (ICMLA'17). (**Best Paper Award Top 3 Finalist**, *Corresponding Author)
20. [ICMLA-17] Nezhad, MZ, **Zhu, D**, Yang, K and Levy, P. (2017) A Supervised Bi-Clustering Approach for Precision Medicine. In the proceeding of 16th IEEE International Conference on Machine Learning and Application (ICMLA'17). (**Best Poster Award Top 3 Finalist**, *Corresponding Author)
21. [BIBM-17] Li, X, **Zhu, D** and Levy, P (2017) Predictive Deep Network with Leveraging Clinical Measure as Auxiliary Task. In the proceedings of 2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM'17)
22. [ICDM-17] Wang, L, Li, Y, Zhou, J, **Zhu, D** and Ye, J (2017) Multi-task Survival Analysis. In the proceedings of 2017 IEEE International Conference on Data Mining (ICDM'17) **(Acceptance rate: 972/778=9.25%)**
23. [AMIA-17] Li, X, **Zhu, D**, Dong, M, Nezhad, MZ and Levy, P (2017) SDT: A Tree Method for Detecting Patient Subgroups with Personalized Risk Factors. In the

proceedings of 2017 American Medical Information Association (AMIA) Summit on Clinical Research Informatics, San Francisco, March 2017.

24. [BIBM-16] Nezhad, MZ, **Zhu, D**, Li, X, Yang, C and Levy, P (2016) SAFS: A Deep Feature Selection Approach for Precision Medicine. In the proceedings of 2016 IEEE Inernational Conference on Bioinformatics and Biomedicine (IEEE BIBM 2016).

25. [ACM-BCB-16] Xu, H, Dong, M, **Zhu, D**, et al. (2016) Text Classification with Topic-based Word Embedding and Convolutional Neural Networks. In the proceedings of 2016 ACM Conference on Bioinformatics, Computational Biology and Health Informatics (ACM BCB 2016).

26. [ICME-16] Almomani, R, Dong, M and **Zhu, D.** (2016) Bayesian Hierarchical Appearance Model for Robust Object Tracking. in the Proceeding of International Conference on Multimedia and Expo (ICME) 2016. Accepted. (Acceptance rate: 30%)

27. [ISBRA-16] Wang, L, **Zhu, D**, Li, Y and Dong, M. (2016) Poisson-Markov Mixture Model and Parallel Algorithm for Binning Massive and Heterogeneous DNA Sequencing Reads. to be in the Series of *Lecture Notes in Computer Science***,** Accepted (Acceptance rate: 26%)

28. [ISBRA-14] Deng, N and **Zhu, D** (2014) dSpliceType: a multivariate model for detecting various types of differential splicing events using RNA-Seq. in the Series of *Lecture Notes in Computer Science***,** vol. 8492, pp.322-333 (Acceptance rate: 29%)

29. [WCCI-14] Judeh, T, Jayyousi, T, Acharya, LR, Reynolds, R and **Zhu, D.** (2014) GSCA: Reconstructing biological pathway topologies using a cultural algorithms approach. In the proceeding of 2014 IEEE Congress on Evolutionary Computing (IEEE WCCI'14), Beijing, China (Acceptance rate: 49.5% including posters)

30. [ACM-BCB-13] Deng, N and **Zhu, D.** (2013). Detecting various types of differential splicing events using RNA-Seq data. in the proceedings of 2013 ACM Conference on Bioinformatics, Computational Biology and Biomedicine (ACM BCB'13), Washington D.C., pp 124-132. (Acceptance rate: 29%)

31. [ACM-BCB-13] Nguyen, T and **Zhu, D.** (2013). MarkovBin: an algorithm to cluster Metagenomic reads using a mixture modeling of hierarchical distributions. in the proceedings of 2013 ACM Conference on Bioinformatics, Computational Biology and Biomedicine (ACM BCB'13), Washington D.C., pp115-123. (Acceptance rate: 29%)

32. [ACM-BCB-13] Judeh, T, Jayyousi T, Reynolds, B and **Zhu, D.** (2013). Gene set cultural algorithm: A cultural algorithm approach to reconstruct networks from gene sets. in the proceedings of 2013 ACM Conference on Bioinformatics, Computational Biology and Biomedicine (ACM BCB'13), Washington D.C., pp 641-648. (Acceptance rate: 29%)

33. [ACM-BCB-12] Judeh, T, Nguyen, T and **Zhu, D.** (2012). QSEA for fuzzy subgraph querying of KEGG pathways. in the proceedings of 2012 ACM Conference on Bioinformatics, Computational Biology and Biomedicine (ACM BCB'12), Orlando, FL, pp 474-481. (Acceptance rate: 21%)

34. [BIBM-09] **Zhu, D.**, Xu, G., Acharya, LR. (2009) A generalized multivariate approach for correlation-based pattern discovery from replicated molecular profiling data. 2009 IEEE International Conference on Bioinformatics and Biomedicine (IEEE BIBM'09), art. no. 5341743, pp. 405-410 (Acceptance rate: 33%)

35. [ICMLA-09] Acharya, LR., **Zhu, D** (2009) Estimating an optimal correlation structure from replicated molecular profiling data using finite mixture models. 8th International Conference on Machine Learning and Applications, ICMLA 2009, art. no. 5381811, pp. 119-124 (Acceptance rate: 46%)

36. [ICMLA-07] **Zhu, D**, Li, H: (2007) Improved bayesian network inference using relaxed gene ordering. 6th International Conference on Machine Learning and Applications, ICMLA 2007, art. no. 5381811, pp. 600-605 (Acceptance rate: 28%)

37. [ICASSP-05] **Zhu, D.**, Hero, A.O. (2005) Gene co-expression network discovery with controlled statistical and biological significance. ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing - Proceedings V, art. no. 1416317, pp. V369-V372. 2005

38. [ICASSP-05] **Zhu, D.**, Hero, A.O. (2005) Network constrained clustering for gene microarray data. ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing -Proceedings, V, art. no. 1416416, pp. V765-V768.

2. Refereed Workshop Papers

1. [AdvML@ICML-22] Li, X., Qiang, Y. Li, C., Liu, S. and **Zhu, D.** (2022) Saliency guided adversarial training for tackling generalization gap with applications to medical imaging classification system. In the proceedings of new frontiers in adversarial machine learning (AdvML) workshop at ICML, 2022.
2. [BIBMW-11] Zhao, Z, Nguyen, T and **Zhu, D.** (2011) SPATA: a highly accurate algorithm for de novo transcriptome assembly using RNA-seq, in Next-Generation Sequencing Workshop of IEEE BIBM 2011, Atlanta, GA, pp 26-33.
3. Nguyen, T, Deng, N, Xu, G, Duan, Z and **Zhu, D**. (2011) iQuant: A fast yet accurate GUI tool for isoform quantification using RNA-seq, in Next-Generation Sequencing Workshop of IEEE BIBM 2011, Atlanta, GA, pp1048 - 1050.
4. **Zhu, D.**, Hero, A.O. (2005) Identifying differentially expressed genes from probe level intensities in longitudinal affymetrix microarray experiments. IEEE Workshop on Statistical Signal Processing Proceedings 2005, art. no. 1628818, pp. 1420-1425.

L. Papers Presented

1. Invited and/or Refereed Internationally or Nationally

- European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-2022), Grenoble, France.
- 31th International Joint Conference on Artificial Intelligence (IJCAI-22), Messe Wien, Vienna, Austria.
- International Joint Conference on Neural Networks (IJCNN-22)
- 30th International Joint Conference on Artificial Intelligence (IJCAI-21), Virtual Conference
- Thirty-Five AAAI Conference on Artificial Intelligence (AAAI-21), virtual conference.
- 29th International Joint Conference on Artificial Intelligence (IJCAI-20), Virtual Conference
- Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20), New York, 2020.
- IEEE International Symposium on Biomedical Imaging (ISBI-20)
- Medical Imaging with Deep Learning (MIDL-20) conference
- International Joint Conference on Neural Networks (IJCNN-20)
- Michigan Government Summit 2017, Lansing, MI, 2017.
- National Science Foundation CPS PI meeting, 2017
- IEEE International Conference on Bioinformatics and Biomedicine (BIBM2016), Shenzhen, China, 2016
- The 2nd Worldwide Chinese Translational Biomedical Informatics Workshop (WC-TBIW2015) – Suzhou, China, 2015
- IEEE World Congress on Computational Intelligence (WCCI2014), Beijing, China
- 10th International Symposium on Bioinformatics Research and Applications (ISBRA2014), Zhangjiajie, China
- ACM Conference on Bioinformatics, Computational Biology and Biomedicine (BCB2013), Washington DC, USA
- The 3rd Annual World Congress on Molecular Medicine (MolMed2013) – Haikou, China
- The 4th Annual World Congress on DNA and genome (WDD2013) – Nanjing, China
- International Society for Computational Biology (ISCB2012) – Asia, Shenzhen, China
- Zing Conference on Computational Medicine – Cancun, Mexico
- Cambridge Health Institute (CHI) Next-Generation Sequencing Conference, RI, USA
- IEEE International Conference on Bioinformatics and Biomedicine (BIBM2009), Washington DC, USA
- International Conference on Machine Learning and Applications (ICMLA 2007), Cincinnati, OH, USA

M. Invited Seminars or Lectures

- Case Western Reserve University, 2021
- Chinese University of Hong Kong (Shenzhen), 2017

- University of Illinois at Chicago, 2016
- Iowa State University, 2015
- St Louis University, 2015
- University of Nevada at Las Vegas, 2015
- Indiana University – Purdue University at Indianapolis (IUPUI), 2014
- University of Windsor, 2013
- University of Michigan, 2013
- Chinese Academy of Science, Shanghai, 2013
- Michigan State University, 2012
- Chinese Academy of Science, Beijing, 2012
- University of Michigan, 2012
- Emory University, 2011
- National Institute of Health, 2011
- Louisiana State University Health Sciences Center, 2011
- Tulane University, 2011
- Worcester Polytechnic Institute, 2011
- Wayne State University, 2011
- University of Alabama at Birmingham, 2009
- University of Kansas, 2009
- University of South Carolina, 2008
- University of Missouri - Columbia, 2007
- University of Missouri – Kansas City, 2007
- University of New Orleans, 2007
- University of Cincinnati, 2007

N. Other Scholarly Work

1. Tutorial presentation

- Title: “Transcriptome analysis using RNA-seq”, ACM Conference on Computational Biology and Bioinformatics (ACM BCB 2014)
- Title: “Biological network construction, query and analysis”, ACM Conference on Computational Biology and Bioinformatics (ACM BCB 2013)

III. SERVICE

A. Administrative Appointments at Wayne State in Last Five Years:

Co-Director: Master Program in Artificial Intelligence, College of Engineering (2022 – present)
Founding Director: Wayne AI Research Initiative, Wayne State University (2021 – present)
Director: Trustworthy AI Lab at Department of Computer Science, Wayne State University (2011 – present)
Chair: Faculty Search Committee, Department of Computer Science, Wayne State University
Director: Computer Science Graduate Program, Wayne State University (2018 – 2020)

B. Administrative Appointments at Other College/University in Last Five Years:

Head: Bioinformatics Division, Department of Computer Science, University of New Orleans (2009 – 2011)
Director: Bioinformatics Lab at Department of Computer Science, University of New Orleans (2008 – 2011)

C. Committee Assignments in Last Five Years

4. College/Department Committee Membership

1. Undergraduate committee (2011 – 2015)
2. Graduate committee chair (2018-2020)
3. Graduate committee (2012 – present)
4. Personnel & Salary committee (2014 – 2018, 2020-2021)
5. Budget advisory committee (2014 – 2015)
6. PhD Proficiency Exam (Data Structures and Algorithms, Fall 2012, Winter 2015, Winter 2017)
7. ABET committee (2012 – 2014)
8. Faculty search committee (2013)
9. Distinguished seminar committee (2011 -2017)
10. Social committee (2012 – 2013)
11. Scholarship award committee (2012 - 2016)
12. EECS Joint Committee (*ad hoc* 2015-2016)
13. Teaching and Workload Committee (*ad hoc* 2016)
14. College Technology Advisory Committee (*ad hoc* 2014, 2017 - 2019)
15. College Academic Standard Committee (2014- Present)

F. Professional Consultation

3. Consulting to Public Agencies, Foundations and Professional Associations:

- NIH/ SREA study section, June 2022
- NIH/SREA study section, November 2021
- NIH/SBIR study section, 2020
- NSF/CISE panelist, 2009(2)
- NSF/ABI panelist, 2011, 2015, 2017

- NSF/CISE mail reviewer, 2013, 2015
- NSF/SI2 mail reviewer (2), 2014
- NIH reviewer for ZRGG1 BST-U (80)R study section, 2016
- NIH reviewer for AARR-H (52) R study section, 2009
- NIH reviewer for ZRG1 AARR-H study section, 2009
- NIH reviewer for ZRG1 HDM-G study section, 2009
- NIH reviewer for ZRG1 HDM-P study section, 2009
- NIH: ACE study section 2009-2011
- Xavier University of Louisiana, consultant, 2011 -2012
- Nazarbayev University Grant Review, Winter 2013, Fall 2013, Fall 2014, Fall 2018, Fall 2020, Fall 2021
- Natural Sciences and Engineering Research Council of Canada (NSERC) grant review, 2018
- University of Michigan, CCMB Grant Reviewer, 2013

2. Consulting to Private Enterprises

- Grant reviewer for Ochsner Health Sciences Systems in New Orleans, 2014
- Grant reviewer for Windsor & Essex County Cancer Centre Foundation, 2013, 2016
- Tulane Health Science Center, 2013

G. Journal/Editorial Activity

1. Editorships

- *Scientific Reports* (impact factor 4.04), Editorial Board Member (2016 -)
- *BMC Genomics* (impact factor 4.04), Associate Editor (2014 -)
- *PLoS ONE* (impact factor 3.73), Academic Editor (2010 -)
- *Frontiers in Genetics*, Associate Editor (2010 -)
- *BMC Bioinformatics* (impact factor 2.67), Guest Editor (2013)
- *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (impact factor 1.62), Guest Editor (2014)
- *BioMed Research International* (impact factor 2.88), Guest Editor (2014)

2. Editorial Board Memberships:

- *Scientific Reports*, (impact factor 5.228) Editorial Board Member (2017 – present)
- *International Journal of Computational Biology and Drug Design*, Editorial Board (2013 -)

H. Other Professionally Related Service:

1. Conference (Senior) PC Membership (Selected):

2022
Tenth International Conference on Learning Representations (ICLR-22)
Neural Information Processing Systems 2022 (NuerIPS-22)
31th International Joint Conference on Artificial Intelligence (IJCAI-22)
36th AAAI Conference on Artificial Intelligence (AAAI-22)
Thirty-ninth International Conference on Machine Learning (ICML-22)
25th International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI-22)

2021
Neural Information Processing Systems 2021
30th International Joint Conference on Artificial Intelligence
Thirty-eighth International Conference on Machine Learning
24th International Conference on Medical Image Computing & Computer Assisted Intervention

2020
The 1st Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 9th International Joint Conference on Natural Language Processing
The 58th Annual Meeting of the Association for Computational Linguistics
The 2020 Conference on Empirical Methods in Natural Language Processing
23rd International Conference on Medical Image Computing & Computer Assisted Intervention
IEEE 2020 International Conference on Machine Learning and Applications
35th AAAI Conference on Artificial Intelligence
Neural Information Processing Systems 2020
29th International Joint Conference on Artificial Intelligence
Medical Image Computing and Computer Assisted Interventions 2020
2019
34th AAAI Conference on Artificial Intelligence
The 7th IEEE International Conference on Healthcare Informatics (ICHI 2019), Beijing, China, June 10-13, 2019.
IEEE International Conference on Bioinformatics and Biomedicine (IEEE-BIBM2016)
International Conference on Bioinformatics (InCoB 2019)

2018
The 9th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB 2018)
International Conference on Bioinformatics (INCOB-2018)

2017
16th IEEE International Conference On Machine Learning And Applications (ICMLA 2017)
IEEE International Conference on Bioinformatics and Biomedicine (IEEE-BIBM2017)
The 8th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB 2017)

2016

IEEE International Conference on Bioinformatics and Biomedicine (IEEE-BIBM2016)
International Conference on Bioinformatics (InCoB 2016)

2015

IEEE International Conference on Bioinformatics and Biomedicine (IEEE-BIBM2015)
International Conference on Bioinformatics (InCoB 2015)

2014

IEEE International Conference on Bioinformatics and Biomedicine (IEEE-BIBM2014)
IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS 2014)
International Conference on Intelligent Biology and Medicine (ICIBM 2014)
International Conference on Bioinformatics (InCoB 2014)
International Congress on Image and Signal Processing (CISP 2014)
International Congress on Biomedical Engineering and Informatics (BMEI 2014)
Workshop on Genomic Signal Processing and Statistics (GENSIPS 2014)
Great Lakes Bioinformatics Conferences (GLBIO 2014)

2013

IEEE International Conference on Bioinformatics and Biomedicine (BIBM2013)
International Conference on Intelligent Biology and Medicine (ICIBM 2013)
International Conference on Bioinformatics (InCoB 2013)
Great Lakes Bioinformatics Conferences (GLBIO 2013)
Workshop on Genomic Signal Processing and Statistics (GENSIPS 2013)
Translational Bioinformatics Conference 2013 (TBC 2013)

2012

IEEE International Conference on Bioinformatics and Biomedicine (BIBM2012)
Workshop on Genomic Signal Processing and Statistics (GENSIPS 2012)
International Workshop on Data Mining in Bioinformatics (BIOKDD 2012)

2011

IEEE International Conference on Bioinformatics and Biomedicine (BIBM2011)

2010

IEEE International Conference on Bioinformatics and Biomedicine (BIBM2010)

International Bioinformatics Workshop (IBW2010)
International Conference on Computer Technology (CCT 2010)

2009

IEEE International Conference on Bioinformatics and Biomedicine (BIBM2009)

2. Program/Session/Workshop chair:

- Workshop co-chair (w. Sijia Liu from MSU), Frontiers in Adversarial Machine Learning @ International Conference on Machine Learning (ICML 2022).
- Poster co-chair (with Lin Yang from University of Florida), ACM Conference on Computational Biology and Bioinformatics (ACM BCB 2016)
- Poster co-chair (with Yu-Ping Wang from Tulane), ACM Conference on Computational Biology and Bioinformatics (ACM BCB 2015)
- Program co-chair (with Sarath Janga from IUPUI), International Workshop on Data Mining in Bioinformatics (BIOKDD'14)
- Poster co-chair (with Yu-Ping Wang from Tulane), ACM Conference on Computational Biology and Bioinformatics (ACM BCB 2014)
- Poster co-chair (with Yu-Ping Wang from Tulane), ACM Conference on Computational Biology and Bioinformatics (ACM BCB 2013)
- Local chair, International Conference on Machine Learning and Applications (ICMLA 2014)
- Publicity chair, International Conference on Intelligent Biology and Medicine (ICIBM 2014)
- Workshop co-chair (with Steve Qin from Emory), Next-Generation Sequencing Data Analysis Workshop in Conjunction with BIBM 2013 Conference
- Workshop co-chair (with Steve Qin from Emory), Next-Generation Sequencing Data Analysis Workshop in Conjunction with BIBM 2012 Conference
- Workshop co-chair (with Steve Qin from Emory), Next-Generation Sequencing Data Analysis Workshop in Conjunction with BIBM 2011 Conference
- Workshop co-chair (with Kun Huang from Ohio State), Next-Generation Sequencing Data Analysis Workshop in Conjunction with ICIBM 2013 Conference
- Workshop co-chair (with Kun Huang from Ohio State), Next-Generation Sequencing Data Analysis Workshop in Conjunction with ICIBM 2012 Conference
- Session chair, International Biometric Society - Eastern North American Region Conference (ENAR 2007)

3. Journal reviewer:

- *Machine Learning*
- *Pattern Recognition*
- *Neural Computing*
- *Journal of Artificial Intelligence*
- *Bioinformatics*

- *Nucleic Acids Research*
- *Genome Biology*
- *Genome Medicine*
- *Briefings in Bioinformatics*
- *Human Molecular Genetics*
- *BMC Genomics*
- *BMC Bioinformatics*
- *BMC Systems Biology*
- *Biometrics*
- *PLoS Genetics*
- *PLoS Computational Biology*
- *PLoS ONE*
- *Scientific Reports*
- *Biology Direct*
- *IEEE Transaction on Knowledge and Data Engineering*
- *IEEE Transaction on Neural Network and Learning Systems*
- *IEEE Transaction on Fuzzy Systems*
- *IEEE Transaction on Computational Biology and Bioinformatics*
- *IEEE Signal Processing Letters*
- *IEEE Transaction on Computers*
- *EURASIP Bioinformatics and Systems Biology*
- *IET Systems Biology*
- *Physics Review*
- *Statistics in Medicine*
- *Communications in Statistics*
- *Radiation Research*