

Na Zou

CONTACT INFORMATION	204D Fermier Hall College Station, TX 77843-3367 nzoul@tamu.edu	<i>Office:</i> (+1) 979-862-7825 <i>Cell:</i> (+1) 480-265-6395
RESEARCH INTERESTS	Network Modeling and Inference: Dynamic Networks, Network Embedding with Heterogeneous Information, Anomaly Detection Machine Learning: Fairness in Machine Learning, Interpretable Machine Learning, Transfer Learning, Sparse Learning, Uncertainty Quantification Brain Informatics: Connectivity Modeling from Neuroimaging, Cognitive Performance Assessment, Biomarker Identification, Disease Diagnosis and monitoring	
HIGHLIGHTS	<ul style="list-style-type: none">• Obtained \$848,725 (as personal share, and over \$2M in total) external research funding from National Science Foundation and industrial sponsors, with additional \$61,035 from Texas A&M University.• Published at prestigious journals such as Technometrics, IISE Transactions and ACM Transactions, including one Best Student Paper Finalist, one Best Paper Finalist at INFORMS QSR and two featured articles at ISE Magazine.• Actively collaborated with multidisciplinary teams from Computer Science, Health Informatics, Statistics and Social Sciences with a track record of successful joint publications and collaborative research grants.• Committed to promote diversity and inclusion with a track record of mentoring female students and underrepresented minorities, and organizing related events.	
EDUCATION	Ph.D. in Industrial Engineering Arizona State University, Tempe, Arizona, USA Committee: Jing Li (Chair, now at Georgia Tech), Teresa Wu, Douglas Montgomery, Connie Borrer, Mustafa Baydogan	Nov 2015
	Certificate in Statistics, Arizona State University, Tempe, Arizona, USA	May 2012
	Master of Engineering in Transportation Engineering Arizona State University, Tempe, Arizona, USA	May 2012
APPOINTMENTS	Tenure-track Assistant Professor Department of Engineering Technology and Industrial Distribution, Texas A&M University	Sep 2020 -
	Assistant Professor of Instruction Department of Industrial and Systems Engineering, Texas A&M University	Sep 2016 - Aug 2020
HONORS AND AWARDS	<ul style="list-style-type: none">• Texas A&M Institute of Data Science Career Initiation Fellow• Best Student Paper Award Finalist, INFORMS QSR• Best Paper Award Finalist, INFORMS QSR	2021 2019 2019

- Featured in ISE Magazine, Institute of Industrial and Systems Engineers (IISE) 2018
- TEES Travel Grant for NSF Workshop, College of Engineering, TAMU 2017
- Selected to New Faculty Colloquium, IISE 2017
- Irv Kaufman Award, IEEE Foundation 2015
- Graduate College Block Grant Funding Award, Arizona State University 2011
- Graduate Study Incentive Scholarship, Arizona State University 2011
- Transportation Research Board Conference Travel Grant, Arizona State University 2010
- University Graduate Fellowship, Arizona State University 2010 - 2011

RESEARCH GRANTS

Pending

- [G1] Title: *CAREER: Human Knowledge Infused Fairness in Machine Learning*
 Sponsor: National Science Foundation
 Total Dollar Amount: \$528,009
 Role: PI
 Period of Performance: 2022-2027
 Personal Share: \$528,009

Funded

- [G1] Title: *III: Medium: Collaborative Research: Towards Effective Interpretation of Deep Learning: Prediction, Representation, Modeling and Utilization*
 Sponsor: National Science Foundation
 Total Dollar Amount: \$961,149
 Role: Co-PI
 Period of Performance: 2019-2022
 Personal Share: \$380,455
- [G2] Title: *FAI: Towards Fairness in Deep Neural Networks with Learning Interpretation*
 Sponsor: National Science Foundation
 Total Dollar Amount: \$900,000
 Role: Co-PI
 Period of Performance: 2020-2023
 Personal Share: \$299,786
- [G3] Title: *Binder Jet Additive Manufacturing with Granulated Ceramic Powders*
 Sponsor: National Science Foundation
 Total Dollar Amount: \$69,956
 Role: Co-PI
 Period of Performance: 2020-2021
 Personal Share: \$3,000
- [G4] Title: *Fraud Detection with Large-scale and Heterogeneous Data*
 Sponsor: General Motors
 Total Dollar Amount: \$213,875
 Role: Co-PI
 Period of Performance: 2020-2020

Personal Share: \$115,484

- [G5] Title: *X-grant: Disaster City Digital Twin: Integrating Machine and Human Intelligence to Augment Flood Resilience*
Sponsor: Texas A&M University
Total Dollar Amount: \$ 1,000,000
Role: Member
Period of Performance: 2020-2023
Personal Share: \$61,035
- [G6] Title: *Deep Network Embedding for Dynamic Attributed Networks*
Sponsor: Alibaba Group
Total Dollar Amount: \$100,000
Role: Co-PI
Period of Performance: 2018-2019
Personal Share: \$50,000

PUBLICATIONS

Journal Papers

- [J1] Mingyang Wan, Daochen Zha, Ninghao Liu, **Na Zou**. "Techniques for Modeling Machine Learning Fairness: A Survey." 2021. ACM Transactions on Knowledge Discovery from Data (TKDD). (submitted).
- [J2] Mengnan Du, Fan Yang, **Na Zou**, Xia Hu. "Fairness in Deep Learning: A Computational Perspective." 2020. IEEE Intelligent Systems. PP(99):1-1.
- [J3] Abhinav Bhardwaj, Joseph Vasselli, Matt Lucht, Zhijian Pei, Brian Shaw, Zachary Grassley, Xingjian Wei1, **Na Zou**. "3D Printing of Biomass-fungi Composite Material: A Preliminary Study." 2020. Manufacturing Letters. 24(2020):96-99.
- [J4] Abhinav Bhardwaj, Scott Z Jones, Negar Kalantar, Zhijian Pei, John Vickers, Timothy Wangler, Pablo Zavattieri, **Na Zou**. "Additive Manufacturing Processes for Infrastructure Construction: A Review." 2019. ASME Journal of Manufacturing Science and Engineering. 141(9).
- [J5] **Na Zou**, Xiao Huang. "Empirical Bayes Transfer Learning for Uncertainty Characterization in Predicting Parkinson's Disease Severity." 2018. IISE Transactions on Healthcare Systems Engineering. 8(3):209-219. (Featured in ISE Magazine).
- [J6] Xiao Huang, Jundong Li, **Na Zou**, Xia Hu. "A General Embedding Framework for Heterogeneous Information Learning in Large-scale Networks." 2018. ACM Transactions on Knowledge Discovery from Data. 12 (2018): 70:1-70:24. (INFORMS QSR Best Student Paper Award Finalist).
- [J7] Hande Cakin, Berk Gorgulu, Mustafa Gokce Baydogan, **Na Zou**, Sinan Kerem Tuncel, Jing Li. "A Data Adaptive Biological Sequence Representation for Supervised Learning." 2018. Journal of Healthcare Informatics Research. 2(4):448-471.
- [J8] **Na Zou**, Jing Li. "Modeling and Change Detection of Dynamic Networks by a Network State Space Model." 2017. IISE Transactions. 49(1):45-57. (Featured in ISE Magazine).

- [J9] Dmitry Titov, Janine Diehl-Schmid, Kuangyu Shi, Robert Perneczky, **Na Zou**, Stefan Förster, Timo Grimmer, Jing Li, Alexander Drzezga, Igor Yakushev. “Metabolic Connectivity for Differential Diagnosis of Dementing Disorders.” 2017. *Journal of Cerebral Blood Flow & Metabolism*. 37(1):252-262 (impact factor 5.41, ranked 18 among 335 journals in Neurology).
- [J10] **Na Zou**, Mustafa Baydogan, Yun Zhu, Wei Wang, Ji Zhu, Jing Li. “A Transfer Learning Approach for Predictive Modeling of Degenerate Biological Systems.” 2015. *Technometrics*. 55(3):362-373.
- [J11] **Na Zou**, Gael Chetelat, Mustafa Baydogan, Jing Li, Florian Fischer, Dmitry Titov, Juergen Dukart, Andreas Fellgiebel, Mathias Schreckenberger, Igor Yakushev. “Metabolic Connectivity as Index of Verbal Working Memory.” 2015. *Journal of Cerebral Blood Flow & Metabolism*. 35:1122-1126 (impact factor 5.41, ranked 18 among 335 journals in Neurology).

Refereed Conference Papers

- [C1] Guanchu Wang, Mengnan Du, Ninghao Liu, **Na Zou**, Xia Hu. “Mitigating Algorithmic Bias with Limited Annotations.” 2021. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. (Submitted)
- [C2] Huiqi Deng, **Na Zou**, Weifu Chen, Guocan Feng, Mengnan Du, Xia Hu. “Mutual Information Preserving Back-propagation: Learn to Invert for Faithful Attribution.” 2021. *The 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*. (Acceptance rate as 15.4%)
- [C3] Ruixiang Tang, Mengnan Du, Yuening Li, Zirui Liu, **Na Zou**, Xia Hu. “Mitigating Gender Bias in Captioning Systems.” 2021. *International World Wide Web Conference (TheWebConf)*. (Acceptance rate as 20.6%)
- [C4] Huiqi Deng, **Na Zou**, Mengnan Du, Weifu Chen, Guocan Feng, Xia Hu. “A Unified Taylor Framework for Revisiting Attribution Methods.” 2021. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. (Acceptance rate as 21%).
- [C5] Kaixiong Zhou, Qingquan Song, Daochen Zha, **Na Zou** and Xia Hu. “Multi-Channel Graph Convolutional Networks.” 2020. *The 29th International Joint Conference on Artificial Intelligence and the 17th Pacific Rim International Conference on Artificial Intelligence (IJCAI-PRICAI)*. (Acceptance rate as 12.6%)
- [C6] Zhengyang Wang, **Na Zou**, Dinggang Shen, Fellow, IEEE, and Shuiwang Ji, Senior Member, IEEE. “Non-local U-Net for Biomedical Image Segmentation.” 2020. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. (Acceptance rate as 20.6%)
- [C7] Hao Yuan, **Na Zou**, Shaoting Zhang, Senior Member, IEEE, Hanchuan Peng, Senior Member, IEEE, and Shuiwang Ji, Senior Member, IEEE. “Learning Hierarchical and Shared Features for Improving 3D Neuron Reconstruction.” 2019. *IEEE International Conference on Data Mining (ICDM)*. (Acceptance rate as 9.08%)
- [C8] Yuening Li, Xiao Huang, Jundong Li, Mengnan Du and **Na Zou**. “SpecAE: Spectral Autoencoder for Anomaly Detection in Attributed Networks.” 2019. *The 28th ACM International Conference on Information and Knowledge Management (CIKM)*. (Acceptance rate as 21% and INFORMS QSR Best Referred Paper Award Finalist).

- [C9] Abhinav Bhardwaj, Negar Kalantar, Elmer Molina, **Na Zou**, Zhijian Pei. “Extrusion-Based 3D Printing of Porcelain: Feasible Regions.” 2019. Proceedings of the ASME 2019 International Manufacturing Science and Engineering Conference (MSEC).

PRESENTATIONS

- “Fairness in Machine Learning: a computational perspective.” IISE DAIS Webinar, Jan. 19, 2021.
- “Empirical Bayes Transfer Learning for Uncertainty Characterization in Predicting Parkinson’s Disease Severity.” IISE Annual Conference, Orlando, May 18-21, 2019.
- “A General Embedding Framework for Heterogeneous Information Learning in Large-scale Networks.” INFORMS Annual Conference, Phoenix, Nov. 4-7, 2018.
- “Spatial-temporal Transfer Learning: From Brain Disease to Networks.” University of Houston, Houston, Feb. 9, 2018.
- “A Data Adaptive Categorical Time Series Representation for Supervised Learning.” SIAM International Conference on Data Mining, Houston, Apr. 27-29, 2017.
- “Modeling and Change Detection of Dynamic Networks.” INFORMS (Institute for Operations Research and the Management Sciences) Annual Conference, Nashville, Nov. 13-16, 2016.
- “A Probabilistic Framework of Transfer Learning – Theory and Application.” Texas A&M University, College Station, Mar. 8, 2016.
- “A Transfer Learning Approach for Predictive Modeling of Degenerate Biological Systems.” INFORMS Annual Conference, Philadelphia, Nov. 1-4, 2015.
- “A Probabilistic Framework of Transfer Learning – Theory and Application.” INFORMS ASU Chapter, Phoenix, Apr. 24, 2015.
- “Design of Concrete Guardrail and Vehicle Impact Simulation on City Viaduct Roads.” 2nd National Competition of Transportation Science and Technology for Students, Shanghai, China, May 2007.

TEACHING EXPERIENCE

Instructor at Texas A&M University

- IDIS 344-501,502,503,504 Distribution Information and Control Systems Fall 2020
- ISEN 340-501 Operations Research II Spring 2020
- ISEN 310-501 Uncertainty Modeling for Industrial Engineering Spring 2020
- ISEN 340-502 Operations Research II Fall 2019
- ISEN 414-500 Total Quality Engineering Fall 2019
- ISEN 614-600,700 Advance Quality Control Spring 2019
- ISEN 414-500 Total Quality Engineering Fall 2018
- ISEN 613-600 Engineering Data Analysis Fall 2018
- ISEN 613-600 Engineering Data Analysis Spring 2018
- ISEN 616-600 Design and Analysis of Industrial Experiments Spring 2018
- ISEN 340-501,502 Operation Research II Fall 2017
- ISEN 230 Informatics for Industrial Engineers Summer 2017
- ISEN 230 Informatics for Industrial Engineers Spring 2017
- ISEN 340-501,502 Operation Research II Spring 2017
- ISEN 230 Informatics for Industrial Engineers Fall 2016
- ISEN 340-501, 502 Operation Research II Fall 2016

Guest Lecturer at Arizona State University

- IEE 598 Information System Engineering Fall 2012

Teaching Assistant at Arizona State University

- IEE 474 Quality Control Fall 2015
- IEE 579 Time Series Analysis/Forecasting Fall 2014

Teaching Module Developer at Arizona State University

- I was involved in an education project between ASU and University of Texas at El Paso (UTEP), and helped develop a simulation framework based on Netlogo and prepare the instruction of lab exercises to students in UTEP.

ADVISING

PhD Students

1. Qizhang Feng (co-advised with Dr. Xia Hu), Computer Science, Feb 2021-
2. Guanchu Wang (co-advised with Dr. Xia Hu), Computer Science, Dec 2020-
3. Shirun Shen (co-advised with Dr. Lan Zhou), Statistics, May 2018 -
4. Abhinav Bhardwaj (co-advised with Dr. ZJ Pei), Industrial and Systems Engineering, May 2017-

MS Students

1. Mia Wan, Texas A&M University, Jan 2021-
2. Scott Chang, Texas A&M University, Sep 2021-
3. Vedant Mehta, Texas A&M University, Jan 2018- Aug 2018
4. Minhao Yan, Texas A&M University, May 2017-Nov 2017
5. Xinzuo Wang, Northwestern University, May-Aug 2017

Undergraduate Students

1. Nathan Purwosumarto, Texas A&M University, May 2021-

SKILLS

- Extensive experience with Matlab and R
- Familiarity with Minitab, SAS, SPSS, Reliasoft, Weka, Arena and L^AT_EX
- Familiarity with AutoCAD and VB

SERVICE

- Board Director for IISE Quality Control and Reliability Engineering (QCRE) Division 2021-
- Session Chair for INFORMS Quality, Statistics and Reliability (QSR) Section 2021
- Associate Editor for IEEE CASE 2020-
- Reviewer for INFORMS DM Workshop Best Paper Competition 2020
- Reviewer for Data Mining and Knowledge Discovery 2020
- Reviewer for INFORMS Journal on Computing 2020
- Committee Member of INFORMS QSR Member Service and Growth Subcommittee 2019-2020
- Reviewer for Quality Technology and Quantitative management 2020

- Board Director of the Data Analytics and Information Systems Division (DAIS) of IISE 2018-2020
- Reviewer for INFORMS DM Best Student Paper Competition 2019
- Organizer for IISE DAIS Best Student Paper Competition 2019
- Reviewer for IISE DAIS Best Paper Competition 2019
- Reviewer for IEEE Sensors Letters 2018
- Reviewers for IISE Transactions, IISE Transactions on HSE 2018,2019,2020
- Session Chair for IISE Annual Conference (DAIS Track) 2018
- Reviewer for IISE Annual Conference Best Student Paper Competition (DAIS Track) 2018
- Judge for IISE Doctoral Colloquium Poster Competition 2017
- Judge for Society of Women Engineers Region C Conference Poster Competition 2017
- Reviewers for IEEE Transactions on Knowledge and Data Engineering and IISE Transactions on Quality and Reliability Engineering 2012-2015
- Panelist for IE Open House at Arizona State University 2013
- Volunteer for INFORMS Annual Conference 2012

PROFESSIONAL ASSOCIATIONS

- Institute for Operations Research and the Management Sciences (INFORMS)
- Institute of Industrial and Systems Engineers (IISE)
- Institute of Electrical and Electronics Engineers (IEEE)
- Association for Computing Machinery (ACM)