Yu (Adam) Ding

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Objective

Ph.D. in Industrial and Systems Engineering with a focus on machine learning methodology for healthcare data analysis and policy planning. My recent research involves designing machine learning models and optimization algorithms for cancer treatment using cancer genomics, as well as enhancing healthcare operations management and patient treatment planning.

Professional Experience

- **The University of Texas MD Anderson Cancer Center** — *Sep 2024 - Present*
  Postdoctoral Research Fellow, Supervisor: Dr. Wenyi Wang — Houston, Texas
- **The University of Kansas School of Business** — *May 2019 - Jul 2020*
  Research Assistant in Operations Management — Lawrence, Kansas

Education

- **Ph.D. in Industrial and Systems Engineering at Binghamton University** — *Aug 2020 - Aug 2024*
  Advisor: Dr. Bing Si — Vestal, New York
- **M.S. in Industrial Engineering at Wayne State University** — *Aug 2017 - Apr 2019*
  Advisor: Dr. Qingyu Yang — Detroit, Michigan
- **B.S. in Geophysics at University of Science and Technology of China** — *Aug 2013 - Jun 2017*
  Advisor: Dr. Wei Zhang — Anhui, China

Research Topics

- **CliPP2.0: A fast and accurate software for multi-sample sublconal reconstruction** — *2024 - Present*
  Tools: [Advanced Regression, Optimization, Python, R]
  - Our primary goal is to overcome analytical bottlenecks in elucidating the dynamics of somatic mutation evolution and the tumor immune microenvironment (TIME), thereby providing fundamental pan-cancer data resources and generating new hypotheses on the molecular mechanisms underlying resistance to immune checkpoint therapy (ICT).
  - Develop multi-dimensional machine learning for subclonal reconstruction and single cell clustering
  - Develop a CUDA based numerical algorithm for CliPP2.0, which enables the proposed software has outstanding efficiency.
- **Precision Medicine and Privacy-Preserving** — *2020 - 2023*
  Tools: [Functional Regression, Federated Learning, Python, R] [ ]
  - Develop statistical machine learning for obstructive sleep apnea telemedicine
  - Develop a gradient boosting algorithm to solve multivariate function-on-function regression problems efficiently
  - Develop horizontal and vertical Federated Learning (FL) frameworks to use data from different organizations collaboratively with privacy-preserving

Honors and Awards

- **Best Team Award in James P. Allison Institute and IDSO Hackathon 2025** — *April 2025*
  James P. Allison Institute and Institute for Data Science in Oncology
- **QCRE Best Student Paper Competition Finalist** — *May 2024*
  Institute of Industrial and Systems Engineers Annual Conference & Expo
- **National Science Foundation (NSF) Travel Awards** — *May 2024*
  The University of Arizona
- **Watson Professional Development Fund** — *Apr 2024*
  Binghamton University
- **Summer Research Fellowship** — *Apr 2020*
  The University of Kansas
- **University Graduate Fellowship** — *Aug 2019*
  The University of Kansas
- **Graduate Fellowship** — *Aug 2018*
  Wayne State University
- **National Encouragement Scholarship** — *Aug 2016*
  University of Science and Technology of China
- **Kansas Half Marathon Finisher Price** — *Oct 2019*
  Kansas Half Marathon

PUBLICATIONS

M = MANUSCRIPT, J=JOURNAL, T=THESIS, *: CORRESPONDING AUTHOR

[M.4] **Ding, Y.**, Costa, C., Si, B.* (2025). **Federated function-on-function regression with an efficient gradient boosting algorithm for privacy-preserving telemedicine**. Manuscript under second round review *IEEE Transactions on Automation Science and Engineering*; **Selected as QCRE Best Student Paper Competition Finalist, IISE Montreal, 2024**

[M.3] Mueller, S.*, **Ding, Y.**, Si, B., Sutherland, M., Hutchinson, K. (2025). **Access to Campus Health Services at MSI and Non-MSI Colleges and Universities in the U.S.**. Manuscript submitted for publication in *Nursing Research*

[M.2] **Ding, Y.**, Costa, C., Si, B.* (2025). **Vertical Federated Learning of Gradient Boosting for Functional Regression with Differential Privacy**. Manuscript submitted for publication in *IEEE Transactions on Privacy*

[M.1] **Ding, Y.**, Si, W.* (2025). **Multi-System Conditional-Based Maintenance Planning with Social Equity**. Manuscript ready to submit *Management Science*

[J.6] **Ding, Y.**, Somers, V., Si, B.* (2024). **A novel sparse generalized structural equation modeling with structured sparsity for subgroup discovery from multi-modal mixed-type data**. *IISE Transactions*, 1–22. DOI: 10.1080/24725854.2024.2445776

[T.1] **Ding, Y.** (2024). **Statistical Machine Learning and Data Fusion Methodologies: Applications in Healthcare**. *Binghamton University*.

[J.5] Sutherland, M. A.*, Hutchinson, M. K., Si, B., **Ding, Y.**, Liebermann, E., Connolly, S. L., … Mueller, S. D. (2024). **Health screenings in college health centers: Variations in practice**. *Journal of American College Health*, 1-8. DOI: 10.1080/07448481.2024.2361307

[J.4] Mueller, S. D. *, Sutherland, M. A., Hutchinson, M. K., Si, B., **Ding, Y.**, Connolly, S. L. (2024). **Student Health Services at Historically Black Colleges and Universities and Predominantly Black Institutions in the United States**. *Health Equity*, Vol. 8, Issue 1, pp. 226-234. DOI: 10.1089/heq.2023.0219

[J.3] Alramadeen, W., **Ding, Y.**, Costa, C., Si, B. * (2023). **A novel sparse linear mixed model for multi-source mixed-frequency data fusion in telemedicine**. *IISE Transactions on Healthcare Systems Engineering*, Vol. 13, Issue 3, pp. 215-225. DOI: 10.1080/24725579.2023.2202877; **Selected as a Feature Article by the ISE Magazine**

[J.2] Jiang, L., **Ding, Y.**, Sutherland, M. A., Hutchinson, M. K., Zhang, C., Si, B. * (2022). **A novel sparse model-based algorithm to cluster categorical data for improved health screening and public health promotion**. *IISE Transactions on Healthcare Systems Engineering*, Vol. 12, Issue 2, pp. 137-149. DOI: 10.1080/24725579.2021.1980467

[J.1] **Ding, Y.**, Yang, Q.*, King, C. B., Hong, Y. (2019). **A general accelerated destructive degradation testing model for reliability analysis**. *IEEE Transactions on Reliability*, Vol. 68, Issue 4, pp. 1272-1282. DOI: 10.1109/TR.2018.2883983

CONFERENCE PRESENTATION AND INVITED TALKS

- **Federated function-on-function regression with an efficient gradient boosting algorithm for privacy-preserving telemedicine**, Department of Radiation Oncology, Mayo Clinic Arizona, Phoenix AZ, July 1st, 2024
- **Federated function-on-function regression with an efficient gradient boosting algorithm for privacy-preserving telemedicine**, IISE Conference, Montreal Canada, May 18th, 2024 [🌐]

TEACHING EXPERIENCE

- **Guest Lecturer at Rice University** *Spring 2025*
  give lectures on selected topics and reviews, prepare exam questions and manage proctoring, and hold office hours and email Q&A
  ◦ Statistics 623-423 Probability in Bioinformatics and Genetics
- **Guest Lecturer at Binghamton University** *Spring 2024*
  develop course materials, give twelve lectures, host review sessions, and email Q&A
  ◦ SSIE 548: Healthcare Data Sci & Analytics (graduate class)
  ◦ ISE 448: Healthcare Data Sci & Analytics (undergraduate class)
  ◦ Teaching Evaluation Score: 4.5/5.0
- **Teaching Assistant at Wayne State University** *Spring 2018*
  give lectures on selected topics and reviews, prepare exam questions and manage proctoring, and hold office hours and email Q&A
  ◦ IE 6430 Computer Simulation Methods (graduate class)
- **Teaching Assistant at Wayne State University** *Fall 2017*
  give lectures on selected topics and reviews, prepare exam questions and manage proctoring, and hold office hours and email Q&A
  ◦ IE 7270 Reliability Estimation (graduate class)

Grant Writing Experience

- **Helped Ph.D. advisor Dr. Bing Si to prepare and conduct the following grants funded by NIH and industry**
  Binghamton University
  - NIH/NHLBI, "R01HL168173: Sleep and Cardiometabolic Subgroup Discovery and Risk Prediction in United States Adolescents and Young Adults". Amount: $2,452,065
  - NIH/NHLBI, "R21HL161765: Towards Precise Phenotype Discovery of Obstructive Sleep Apnea with a Data-Inclusive Multi-Study Analysis". Amount: $242,770
  - SUNY-IBM AI Research Alliance, "Ray-F2R-FL: Ray-based Functional Regression with Federated Learning". Amount: $200,000
- **Summer Research Fellowship**
  The University of Kansas
  - Independently wrote a proposal for a Student-Led Research Grant. Amount: $5,000

Professional Memberships

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

Professional Service

- **Journal reviewer of IEEE Transactions on Medical Imaging**
- **Journal reviewer of IISE Transactions on Healthcare Systems Engineering**
- **Lab Manager of Microstructure Manufacturing Lab, Wayne State University**
- **Seminar Organizer and Volunteer, Wayne State University**

Additional Information

Programming languages and Tools: Python, C/C++, R, Java, LaTeX, Mysql, CUDA

Last Update: 04/2025