

## RESEARCH INTERESTS

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Machine Learning; Generative Modeling; Data Visualization

## EDUCATION

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### Rice University

August 2021 – May 2023

M.S. in Data Science, GPA: 3.79/4.00

### University of Electronic Science and Technology of China

August 2017 – May 2021

B.E. in Electronic Information Engineering, GPA: 3.66/4.00

## RESEARCH EXPERIENCE

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### Rice Computational Wellbeing Group

January 2024 – July 2024

*Graduate Student Researcher*, with Professor Akane Sano

- Developed a fair diffusion model to generate balanced mixed-type tabular data conditioned on multiple labels [2].
- Created a self-supervised multimodal learning method for stress detection using time series and tabular data [1].

### Rice Computer Graphics/Geometric Design Group

April 2022 – September 2022

*Graduate Student Researcher*, with Professor Joe Warren

- Designed lecture notes and Python programming assignments that cover the principles of neural networks.
- Developed a Python toolbox for animating the training progress of multi-layer perceptrons [5].

### Monash Data Futures Institute

December 2020 – March 2021

*Undergraduate Student Researcher*, with Professor Hao Wang

- Developed an asynchronous distributed alternating direction method of multipliers (ADMM) algorithm to optimize energy trading problems under asynchronous communication, allowing communication delay and indicating a potential for better outcomes in real-world applications [3].
- Optimized investment and daily operating strategy for smart grid considering economic costs and user comfort under different renewable energy target constraints.

## PUBLICATIONS

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*Submitted:*

1. **Zeyu Yang**, Han Yu, Akane Sano, “Contrastive Pretraining for Stress Detection with Multimodal Wearable Sensor Data and Surveys”, Submitted to BHI, 2024.

*Preprints:*

2. **Zeyu Yang**, Peikun Guo, Khadija Zanna, Akane Sano, “Balanced Mixed-Type Tabular Data Synthesis with Diffusion Models”, arXiv:2404.08254, 2024.
3. **Zeyu Yang**, Hao Wang, “Network-Aware Asynchronous Distributed ADMM Algorithm for Peer-to-Peer Energy Trading”, arXiv:2312.06976, 2023.

*Conference Publications:*

4. Yizhuo Yang, Huan Wang, Zhiliang Liu, **Zeyu Yang**, “Few-Shot Learning for Rolling Bearing Fault Diagnosis via Siamese Two-Dimensional Convolutional Neural Network”, in *Asia-Pacific International Symposium on Advanced Reliability and Maintenance Modeling*, 2020.

*Published Software:*

5. *PlotNet*. (2022). [Online]. Available: <https://github.com/zeyuyang8/plotnet>

## AWARDS & HONORS

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Outstanding Undergraduate Student Award	2021
Meritorious Winner of Interdisciplinary Contest in Modeling	2020

## TEACHING EXPERIENCE

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**Data Visualization (COMP 665)**, Rice University February 2022 – May 2023

*Graduate Teaching Assistant*, with Professor Joe Warren

- Answered questions about Python coding issues in weekly projects for a class of over 40 graduate students.
- Developed a geographical data visualization project in Tableau with detailed supporting material for future classes.

**Statistics for Data Science (COMP 680)**, Rice University September 2022 – May 2023

*Academic Tutor*, for Rice Athletics

- Explained statistical techniques, such as hypothesis testing, Markov chain, and linear regression to students.
- Engaged one-on-one with students with problems in statistics and Python programming.

## COURSEWORK

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### Graduate Coursework:

- *Computer Science*: Programming for Data Science, Big Data Management for Data Science, Data Visualization, Graduate Design and Analysis of Algorithms
- *Machine Learning*: Statistical Machine Learning, Deep Learning for Vision and Language, Applied Machine Learning and Data Science Projects
- *Statistics & Optimization*: Statistics for Data Science, Convex Optimization

### Undergraduate Coursework:

- *Computer Science*: Introductory C Programming, Introductory Python Programming
- *Electrical Engineering*: Application and Design of Digital Logic, Signals and Systems, Digital Communication, Micro-electronic Systems, Circuit Analysis and Design, Fundamentals of Analog Circuits
- *Math & Physics*: Linear Algebra and Space Analytic Geometry, Probability Theory and Mathematical Statistics, Calculus I, Calculus II, Physics I, Physics II

## SKILLS & CERTIFICATES

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### Programming:

- *Data Science*: Python (PyTorch, Pandas, Matplotlib), MATLAB, Tableau
- *Web Development*: Python (Django, Dash), HTML, CSS, JavaScript (React), PostgreSQL
- *IT Skills*: Git, AWS, Docker, Linux, Markdown, LaTeX

### Coursera Certificates:

- Back-End Developer Professional Certificate offered by Meta
- Front-End Developer Professional Certificate offered by Meta
- Database Engineer Professional Certificate offered by Meta