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Youran (Echo) Zhou

PhD Candidate, AFHEA

Summary

PhD researcher in machine learning and data science with a focus on robust learning from incomplete and heterogeneous data. My research develops principled representation learning, generative modeling, and benchmarking frameworks for real-world missing data mechanisms, with applications in tabular and structured data. I actively contribute to open-source research tools, interdisciplinary collaboration, and research-led education.

Education

Deakin University, School of Information Technology — Geelong, Australia
Ph.D. in Computer Science, Thesis submitted (under examination) — 2022 - 2026

- Supervisor: A/Prof Sunil Aryal, Dr Mohamed Reda Bouadjenek
- Thesis Title: Effective Approaches for Machine Learning from Incomplete Heterogeneous Tabular Data

The University of Melbourne, Faculty of Science — Melbourne, Australia
Master of Data Science — 2021 - 2022

- Supervisor: A/Prof Jianzhong Qi
- Thesis Title: Synthesizing Tabular Data Using Selectivity Enhanced Generative Adversarial Networks

The University of Melbourne, Faculty of Science — Melbourne, Australia
Bachelor of Science (Major in Data Science) — 2018 - 2020

Publications

1. **Y. Zhou**, J. Wells, M. R. Bouadjenek, and S. Aryal, "HI-PMK: A Data-Dependent Kernel for Incomplete Heterogeneous Data Representation," in *Proceedings of the 28th European Conference on Artificial Intelligence (ECAI)*, 2025. **[Accepted]**
2. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, "Missing Data Imputation: Do Advanced ML/DL Techniques Outperform Traditional Approaches?" in *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*, 2024.
3. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, "MissDDIM: Deterministic and Efficient Conditional Diffusion for Tabular Data Imputation," in *Proceedings of the 34th ACM International Conference on Information and Knowledge Management (CIKM)*, 2025.
4. **Y. Zhou**, "Toward Robust Machine Learning under Diverse Incomplete Data Mechanisms in Real-World Applications," in *Proceedings of the 34th ACM International Conference on Information and Knowledge Management (CIKM)*, 2025, pp. 6817–6820.
5. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, "IVGAE: Handling Incomplete Heterogeneous Data with a Variational Graph Autoencoder," submitted to *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2025.
6. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, "MissHDD: Hybrid Deterministic Diffusion for Heterogeneous Incomplete Data Imputation," submitted to *Pattern Recognition*, 2025.
7. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, "Rethinking Generative Models for Incomplete Tabular Data: A Comprehensive Survey," submitted to *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2025.
8. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, "Missing Data Imputation: A Systematic Review and Conceptual Synthesis with a Unified Benchmarking Framework," submitted to *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 2025.
9. **Y. Zhou**, M. R. Bouadjenek, and S. Aryal, *MissMecha*: An open-source Python package for simulating, benchmarking, and imputing incomplete tabular data under diverse missingness mechanisms, 2025. Source code: https://github.com/echoid/MissMecha Documentation: https://echoid.github.io/MissMecha/

Grants

Travel Grant: The 34th ACM International Conference on Information and Knowledge Management (CIKM)
Association for Computing Machinery (USD$1,200.00) 2025

Research Internship Agreement: 3AI Platform – AI Training Bootcamps
Intersect Australia Limited (AUD$12,600.00) 2024.06 – 2025.03

Experience

Graduate Research Teaching Fellow Melbourne, Australia
Deakin University 2025.03 - 2025.12

Research Data Scientist / Digital Research Trainer Melbourne, Australia
Intersect Australia Limited 2023.06 - Present

Academic Tutor / Capstone Industry Project Mentor Melbourne, Australia
The University of Melbourne 2022.03 - 2025.12

Data Scientist Melbourne, Australia
Walter and Eliza Hall Institute of Medical Research 2021.11 - 2022.02

Talks & Presentations

Guest Lecturer – Data Wrangling
Deakin University 2024.12

Invited Speaker – Student Symposium
Walter and Eliza Hall Institute of Medical Research 2022.09

Teaching Activities

Tutor / Marker / Capstone Project Mentor / Exam Supervisor

- **Deep Learning**, Deakin University 2025
- **Natural Language Processing**, Deakin University 2025
- **A First Course In Statistical Learning**, The University of Melbourne 2025
- **Methods of Mathematical Statistics**, The University of Melbourne 2024 - 2025
- **Thinking and Reasoning with Data**, The University of Melbourne 2023
- **Statistical Modelling for Data Science**, The University of Melbourne 2023
- **Artificial Intelligence** , The University of Melbourne 2022 - 2025
- **Applied Data Science** , The University of Melbourne 2022 - 2025
- **Elements of Data Processing**, The University of Melbourne 2020 - 2025

Course development

- **AI Training Bootcamps - GenAI and LLMs**, Intersect Australia Limited 2024

Professional Qualifications

- **Associate Fellow of the Higher Education Academy (AFHEA)** 2025
  Awarding body: Advance HE (UK).

Professional Activities

Conference Chair

- *The Web Conference (WWW)*, 2025 – **Web Chair**

Program Committee Member

- *Adaptive Learning & Intelligent Systems Conference (ACSW)*, 2026
- *The ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)*, 2023–2025
- *Intelligent Cybersecurity Conference (ICSC)*, 2025 (Short and PhD Papers)
- *International Conference on Intelligent Computing, Communication, Networking and Services (ICCNS)*, 2024

Reviewer / External Reviewer

- *ACM International Conference on Information and Knowledge Management (CIKM)*, 2024–2025
- *IEEE Transactions on Industrial Electronics* (invited reviewer)

Conference Service

- *ACM International Conference on Information and Knowledge Management (CIKM)*, 2025 (Volunteer)

Awards and Honors

- **HDR Research Prize**, Data to Intelligence (D2I) CentreEcho, Deakin University 2025
- **Runner-up**, Visualise Your Thesis (VYT), Deakin University 2025
- **Participant**, Three Minute Thesis (3MT), Deakin University 2024 - 2025
- **Finalist**, Visualise Your Thesis (VYT), Deakin University 2024
- **Melbourne Global Graduate Scholarship**, The University of Melbourne 2022
- **Leaders in Communities Award (LiCA)**, The University of Melbourne 2022