XUANZHI CHEN

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Phone: +86-18922691189

Personal Website | Guangzhou, China
Google Scholar | Github Profile

INTRODUCTION

My long-term endeavors is to apply scientific and technical knowledge to the relevant industrial fields. My current academic interest rests on machine intelligence and computational data analysis. I might also be interested in addressing commercial and financial problems in the future, by drawing inspiration from computer science and applied math.

SKILLS

METHODS **Computational & Mathematical:** Machine Learning, Deep Learning; Probabilistic Graphical Models

CODINGS **Python**, C++, R, Matlab; PyTorch, TensorFlow; Unix, Linux; Distributed-Cluster Computing

EDUCATION

Guangdong University of Technology, GDUT Sep. 2019 – Jun. 2024
Bachelor of Engineering in Computer Science and Technology | *Major GPA: 3.6 (86/100)* *Guangzhou, china*

EMPLOYMENT

Data Mining and Information Retrieval Laboratory, DMIR Lab Sep. 2021 – Sep. 2023
Research Assistant Internship | *Advisors: Wei Chen, Ruichu Cai* *Guangzhou, china*

WORK EXPERIENCES

Research

@ *A Survey on Causal Discovery with Incomplete Time-Series Data* Nov. 2021 – Jun. 2023

- Excavated the paradigms concerning how the latest algorithms infer temporal-causation under hidden factors or miss data
- Categorized the statistical assumptions that are relied by each type of the causality algorithms

@ *Nonlinear Causal Discovery from Unknown Confounding* Nov. 2021 – Jun. 2023

- Studying how to teach AI in neuroscience to unravel causation over (confounding) fMRI data
- Formulated a theory that intuitively showcases causal identification by graphical language
- Developed an algorithms by suggesting the third derivative of pairwise nonlinear functions that increased *10%* in $F1$ score performance and reduced *50%* in computation cost

Profession

@ *Cadimulc: A Light Python Package for Hybrid-Based Causal Discovery* May. 2022 – Jun. 2023

- Contributed python implementation of a causality algorithm proposed in IEEE-TNNLS (2021)
- Provided out-of-the-box APIs that instruct beginners to conduct basic causal inference

Personal Activities

@ *A Primer on Causal Diagram Learning* Sep. 2023 – Apr. 2024

- Popularized causal science concepts to general public by posting a series of videos that use every-day-life examples
- Communicated math behind causation to technical audiences by writing an open online essay

ACADEMIC PAPERS

Publishments

- Liu, Y.*, Zhu, W.*, Qiao, J.*, Huang, Z., Xiang, Y., **Chen, X.**, Chen, W. and Cai, R., 2022. Causal Alignment Based Fault Root Causes Localization for Wireless Network. In *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP).*

Preprints

- **Chen, X.**, Chen, W., Cai, R., 2023. A Survey on Causal Discovery with Incomplete Time-Series Data. In *Xuanzhi's Personal Website.* [paper] [slides]
- **Chen, X.***, Chen, W.*, Cai, R., 2023. Non-linear Causal Discovery for Additive Noise Model with Multiple Latent Confounders. In *Xuanzhi's Personal Website.* [paper][slides]
- **Chen, X.**, 2023. Supplementary Material to: "Non-linear Causal Discovery for Additive Noise Model with Multiple Latent Confounders". In *Xuanzhi's Personal Website.* [paper]

Personal Essaies

- **Chen, X.**, 2024. A Primer on Causal Diagram Learning. In *Xuanzhi's Personal Website.* [paper][slides]

SUPPLEMENTAL MATERIAL

A Report for My Undergraduate Research Work

@ *Hybrid-based Causal Discovery with Machine Learning* Nov. 2024 – Dec. 2024

- Written for readers who wish to make thorough assessment on my undergraduate studies
- Made my work accessible to readers with limited insights into machine learning and causality.

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CERTIFICATIONS

- *(Temporal, Jun. 2024)* English Proficiency (TOEFL) Test Score: 98 (Reading: 25, Listening: 22, Speaking: 24, Writing: 27)
- Graduate Record Examination (GRE) Test Score: 323 (Verbal: 158, Quant: 165)

AWARDS & HONORS

- 2022-2023: Guangdong University of Technology Undergrad Research Program Project Grant
- 2023: Guangdong University of Technology Invention Patent (First Inventor) on Causal Inference with fMRI Data
- 2023: Award (Project Lead) in China College Students' Innovation and Entrepreneurship Competition (Province Level)
- 2022: 2^{nd} Prize in CUMCM (Contemporary Undergraduate Mathematical Contest in Modeling) (Province Level)
- 2021: 2^{nd} Prize in LANQIAO Cup China Software and Information Technology Talent Competition (Province Level)

*EMBEDDED LINKS DISPLAY (IF APPLICABLE)

- Personal Website: https://xuanzhichen.github.io/
- A Report for My Undergraduate Research Work:
  https://xuanzhichen.github.io/work/papers/a_report_for_hybrid-based_causal_discovery.pdf

- My Google Scholar: https://scholar.google.com/citations?user=ewInElIAAAAJ&hl=en&authuser=1
- My Published Paper: https://ieeexplore.ieee.org/abstract/document/9746064
- My Preprinted Paper (1):
  - PDF:
    https://xuanzhichen.github.io/work/papers/a_survey_on_causal_discovery_with_incomplete_time-series_data.pdf
  - Slides:
    https://xuanzhichen.github.io/work/slides/a_survey_on_causal_discovery_with_incomplete_time-series_data.pdf
  - Talk:
    Unavailable
- My Preprinted Paper (2):
  - PDF: https://xuanzhichen.github.io/work/papers/nonlinear_mlc.pdf
  - Slides: https://xuanzhichen.github.io/work/slides/nonlinear_mlc.pdf
  - Talk: https://www.youtube.com/watch?v=4bpx1DPd_Vg&list=PLSyPZ5M_YtDRr9z25YgUjqs7-RLr-x5yg&index=3
- My Preprinted Paper/Supplementary Materials (3):
  https://xuanzhichen.github.io/work/papers/nonlinear_mlc_supplementary_material.pdf

- My Github Profile: https://github.com/xuanzhichen
- My Open-Source Project (User Guidance): https://xuanzhichen.github.io/cadimulc/
- My Open-Source Project (Github Repository): https://github.com/xuanzhichen/cadimulc
- My Coding Sample (Implementation of a Proposed Causality *Algorithm* in IEEE-TNNLS, 2021):
  - Codes: https://github.com/xuanzhichen/cadimulc/blob/master/cadimulc/hybrid_algorithms/hybrid_algorithms.py
  - The *Algorithm*: https://ieeexplore.ieee.org/abstract/document/9317707

- Personal Activity in Causal Science Popularization:
  - Essay: https://xuanzhichen.github.io/work/papers/primer_causal_diagram_learning.pdf
  - Slides: https://xuanzhichen.github.io/work/slides/primer_causal_diagram_learning.pdf
  - Talk: https://www.youtube.com/playlist?list=PLSyPZ5M_YtDQA6YQ7VNGVoNlYZYo_xgpu