XUANZHI CHEN

Undergraduate · Senior Student

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 xuanzhichen G google scholar

PERSONAL INTRODUCTION

I am currently intend to work for more beneficial applications of brain science, with special interests in neurotechnology and cognitive neuroscience. My long-term goal lies in helping understand the (partial) brain intelligence on both perception and cognition. In particular, I incline to leverage the computational methodology to simulate the capability by neural circuits, and to model the mathematical mechanism for further unraveling the specific brain functions.

SKILLS

INTERESTS: **Brain Science, Causation,** NeuroAI, Neurotechnology, Computational Neuroscience

METHODS: **Independence Tests, Bayes Net,** Independent Component Analysis, Variational AutoEncoder, ML Methods

CODINGS: **Python,** PyTorch, R, MATLAB.

EDUCATION

Guangdong University of Technology, GDUT   Sep. 2020 – Present
Bachelor of Science in Computer Science   *Guangzhou, china*

REPRESENTATIVE EXPERIENCE

Data Mining and Information Retrieval Laboratory, DMIR   Sep. 2021 – Sep. 2023
Research Assistant Intern | Advisors: Wei Chen, Ruichu Cai   *Guangzhou, china*
- Motivation: Discover a potential "causal structure" entailed by general raw data.
- Assumption: Presume the "mathematical causal asymmetry" of specific non-linear brain functions.
- Result: Developed the "hybrid-based" discovery algorithms and highlighted a principle as for the non-linear causal inference among brain regions' structures with applications in fMRI brain data.

REPRESENTATIVE WORK

PROJECTS

A Brief Introductory for Causal Diagram Learning   Aug. 2023 – Feb. 2024
Work for Popularization of Science and Technology
- Introduce crucial causal notions by significant issues such as climate change and COVID-19.
- Introduce "down-stream" capabilities of causal diagrams and "upstream" tasks on learning them.

Cadimulc: Light Python Package for Hybrid-Based Causal Discovery   May. 2022 – Feb. 2023
Software
- Provide easy-to-use Python APIs to learn an empirical causal graph with relative efficiency.
- Integrate implementations of hybrid-based approaches and micro workflow of causal discovery.

PAPERS

- ***Chen, XZ.*** A Primer on Learning Causal Graph: Interpret Causation from Causal Discovery Perspectives. *Xuanzhi's Personal Website. 2024.*

- ***Chen, XZ*.**, Chen, W*., Cai, RC. Non-linear Causal Discovery for Additive Noise Model with Multiple Latent Confounders. *Xuanzhi's Personal Website. 2023.*

AWARDS & HONORS

Guangdong University of Technology Invention Patent on causal inference in fMRI data (first inventor)   2023
Guangdong University of Technology Undergraduate Research Program project grant   2021-2023

OTHER

- * Languages: Mandarin Chinese (native)
- * Test of English as a Foreign Language (TOEFL): a score of 85, with a score of 20 in speaking (temporary score, 2023)
- * Graduate Record Examination (GRE): a score of 310 (temporary score, 2023)
- * Interests: skills of writing, software development, classics reading, art & design, badminton, cooking, traveling