[HTML] Proximal Causal Inference With Text Data

JM Chen, R Bhattacharya, KA Keith - arXiv preprint arXiv:2401.06687, 2024

Recent text-based causal methods attempt to mitigate confounding bias by including unstructured text data as proxies of confounding variables that are partially or imperfectly measured. These approaches assume analysts have supervised labels …

[HTML] AttributionScanner: A Visual Analytics System for Metadata-Free Data-Slicing Based Model Validation

X Xuan, JP Ono, L Gou, KL Ma, L Ren - arXiv preprint arXiv:2401.06462, 2024

Data slice-finding is an emerging technique for evaluating machine learning models. It works by identifying subgroups within a specified dataset that exhibit poor performance, often defined by distinct feature sets or meta-information. However, in …

[HTML] Prediction of causal genes at GWAS loci with pleiotropic gene regulatory effects using sets of correlated instrumental variables

M Khan, A Ludl, S Bankier, J Bjorkegren, T Michoel - arXiv preprint arXiv:2401.06261, 2024

Multivariate Mendelian randomization (MVMR) is a statistical technique that uses sets of genetic instruments to estimate the direct causal effects of multiple exposures on an outcome of interest. At genomic loci with pleiotropic gene regulatory effects …

[PDF] Identifying Patient-Specific Root Causal Genes with High Throughput Perturbations

EV Strobl, ER Gamazon - bioRxiv, 2024

The root causes of disease correspond to the initial perturbations to a biological system that generate patient symptoms as a downstream effect. Identifying root causal genes is critical towards developing treatments that modify disease at its …

Research Centre for Information Systems Engineering (LIRIS), Faculty of Economics and Business, KU Leuven, Leuven, Belgium {hans. weytjens, wouter. verbeke …

HWIDW Verbeke, J De Weerdt - … : BPM 2023 International Workshops, Utrecht, The …, 2024

The shift from the understanding and prediction of processes to their optimization offers great benefits to businesses and other organizations. Precisely timed process interventions are the cornerstones of effective optimization. Prescriptive process …

[HTML] Pointwise Maximal Leakage: Robust, Flexible and Explainable Privacy

S Saeidian - 2024

For several decades now, safeguarding sensitive information from disclosure has been a key focus in computer science and information theory. Especially, in the past two decades, the subject of privacy has received significant attention due to the …

[PDF] Inflammatory mediators of type 2 diabetes risk

CG Downie - 2023

Inflammation is a pathological feature underlying many chronic diseases, including type 2 diabetes (T2D). Inflammatory mediators include both signaling proteins (eg, cytokines) and bioactive lipids such as oxylipins, which are derived from oxygenation …

[PDF] **A simplicity bubble problem and zemblanity in digitally intermediated societies**

FS Abrahao, RP Cavassane, M Winter, M Vitti

In this article, we discuss the ubiquity of Big Data and machine learning in society and propose that it evinces the need of further investigation of their fundamental limitations. We extend the “too much information tends to behave like very little …

[PDF] **Modelling and identification of physical linear networks**

EMM Kivits

Networks are essential parts of our natural and physical world. They are everywhere around us and have penetrated deeply into our contemporary society. Physical linear networks consist of interconnected systems that exist in the natural and physical …

Three Epochs of Artificial Intelligence in Health Care

MD Howell, GS Corrado, KB DeSalvo - JAMA, 2024

Importance Interest in artificial intelligence (AI) has reached an all-time high, and health care leaders across the ecosystem are faced with questions about where, when, and how to deploy AI and how to understand its risks, problems, and …

[PDF] **Deep Learning With DAGs**

S Balgi, A Daoud, JM Peña, GT Wodtke, J Zhou - arXiv preprint arXiv:2401.06864, 2024

Social science theories often postulate causal relationships among a set of variables or events. Although directed acyclic graphs (DAGs) are increasingly used to represent these theories, their full potential has not yet been realized in practice. As …

[PDF] **Multiple treatment effect estimation for business analytics using observational data**

Y Tsuboi, Y Sakai, R Shimizu, M Goto - Cogent Engineering, 2024

To correctly evaluate the effects of treatments, conducting randomized controlled trials (RCTs) is a reasonable approach. However, because it is generally difficult to implement RCTs for all treatments, methods to estimate the treatment effects using …

[PDF] **An Empirical Study of Counterfactual Visualization to Support Visual Causal Inference**

AZ Wang, D Borland, D Gotz - arXiv preprint arXiv:2401.08822, 2024

Counterfactuals--expressing what might have been true under different circumstances--have been widely applied in statistics and machine learning to help understand causal relationships. More recently, counterfactuals have begun to …

[PDF] **DiConStruct: Causal Concept-based Explanations through Black-Box Distillation**

R Moreira, J Bono, M Cardoso, P Saleiro… - arXiv preprint arXiv …, 2024

Model interpretability plays a central role in human-AI decision-making systems. Ideally, explanations should be expressed using human-interpretable semantic concepts. Moreover, the causal relations between these concepts should be …

[HTML] **Confounded Budgeted Causal Bandits**

F Jamshidi, J Etesami, N Kiyavash - arXiv preprint arXiv:2401.07578, 2024

We study the problem of learning'good'interventions in a stochastic environment modeled by its underlying causal graph. Good interventions refer to interventions that maximize rewards. Specifically, we consider the setting of a pre-specified budget …

[PDF] **Enhancing Evolving Domain Generalization through Dynamic Latent Representations**

B Xie, Y Chen, J Wang, K Zhou, B Han, W Meng… - arXiv preprint arXiv …, 2024

Domain generalization is a critical challenge for machine learning systems. Prior domain generalization methods focus on extracting domain-invariant features across several stationary domains to enable generalization to new domains. However, in …

[HTML] **Modeling Latent Selection with Structural Causal Models**

L Chen, O Zoeter, JM Mooij - arXiv preprint arXiv:2401.06925, 2024

Selection bias is ubiquitous in real-world data, and can lead to misleading results if not dealt with properly. We introduce a conditioning operation on Structural Causal Models (SCMs) to model latent selection from a causal perspective. We show that the …

Information, Logic, and Inference in the Analysis of Complex Networks

AJ Gutknecht - 2023

This thesis deals with a range of current topics in information theory and statistics. It consists of five distinct contributions: Chapter 2 focuses on the statistics of single-regression Granger causality estimators. Chapters 3-5 address the theory of Partial …

[PDF] **Inferring causal influences from expansive distortions between state space reconstructions**

E Laminski - 2023

State space reconstructions of nonlinear dynamical system contain within their metric and topological properties information about the causal influences between different observables. The expansive distortions among different observables not only reflect …

[PDF] **Argumentation et probabilités, ou pourquoi l'argumentation rationnelle n'est pas (toujours) un raisonnement**

J Jayez - 2023

Résumé In this paper, starting from a central intuition of the French linguists Anscombre and Ducrot (1983), I address the question of how to represent the types of dependence which connect propositions in linguistic argumentative orientation …

[PDF] **Deep Learning With DAGs**

S Balgi, A Daoud, JM Peña, GT Wodtke, J Zhou - arXiv preprint arXiv:2401.06864, 2024

Social science theories often postulate causal relationships among a set of variables or events. Although directed acyclic graphs (DAGs) are increasingly used to represent these theories, their full potential has not yet been realized in practice. As …

Interpreting and Comparing Effects in Logistic, Probit and Logit Regression

JAP Hagenaars, S Kühnel, HJ Andress - 2024