[PDF] Disentangling the evolutionary drivers of social complexity: A comprehensive test of hypotheses

P Turchin, H Whitehouse, S Gavrilets, D Hoyer… - Science Advances, 2022

During the Holocene, the scale and complexity of human societies increased markedly. Generations of scholars have proposed different theories explaining this expansion, which range from broadly functionalist explanations, focusing on the …

Toward an improved understanding of causation in the ecological sciences

ET Addicott, EP Fenichel, MA Bradford, ML Pinsky… - Frontiers in Ecology and the …, 2022

Society increasingly demands accurate predictions of complex ecosystem processes under novel conditions to address environmental challenges. However, obtaining the process-level knowledge required to do so does not necessarily align with the …

[PDF] The Paradox of Time in Dynamic Causal Systems

B Rehder, ZJ Davis, N Bramley - Entropy, 2022

Recent work has shown that people use temporal information including order, delay, and variability to infer causality between events. In this study, we build on this work by investigating the role of time in dynamic systems, where causes take continuous …

[PDF] Variational Causal Dynamics: Discovering Modular World Models from Interventions

A Lei, B Schölkopf, I Posner - arXiv preprint arXiv:2206.11131, 2022

Latent world models allow agents to reason about complex environments with high dimensional observations. However, adapting to new environments and effectively leveraging previous knowledge remain significant challenges. We present …

[PDF] A Database for Reduced-Complexity Modeling of Fluid Flows

A Towne, S Dawson, GA Brès, A Lozano-Durán… - arXiv preprint arXiv …, 2022

We present a publicly accessible database designed to aid in the conception, training, demonstration, evaluation, and comparison of reduced-complexity models for fluid mechanics. Availability of high-quality flow data is essential for all of these …

[PDF] Can Foundation Models Talk Causality?

M Willig, M Zečević, DS Dhami, K Kersting - arXiv preprint arXiv:2206.10591, 2022

Foundation models are subject to an ongoing heated debate, leaving open the question of progress towards AGI and dividing the community into two camps: the ones who see the arguably impressive results as evidence to the scaling hypothesis …

Internet of Medical Things (IoMT) & Secured Using Steganography for Development of Smart Society 5.0

S Dhawan, R Gupta, AK Rana, S Sharma - … Development in Smart Society 5.0: Issues …, 2022

Abstract Nowadays, Internet of Things (IoT) is important part in the present world, which fills in as a feature of our standard life exercises. Despite the fact that IoT gives benefits in many ways. Like through IoT the communication between the doctors and …

[PDF] **Interactive Vision and Language Learning**

A Parvaneh - 2022

Effective and efficient interactions with humans in real environments is an appealing though challenging task for an artificial agent. Despite recent advances in deep learning, especially in the branch of vision and language learning, there are still …

The Road to General Intelligence

J Swan, E Nivel, N Kant, J Hedges, T Atkinson… - 2022

Humans have always dreamed of automating laborious physical and intellectual tasks, but the latter has proved more elusive than naively suspected. Seven decades of systematic study of Artificial Intelligence have witnessed cycles of hubris and …

[PDF] **Getting Off the Gold Standard: A Holistic Approach to Causal Inference with Entropic Causal Graphs**

R Kubinec - 2022

While many classify studies as either descriptive or causal, I argue that causality is a continuous construct, and different inference modes–experimental, observational and mechanistic–can at best provide only partial causal information. To discriminate …

[PDF] **Increasing the power in randomised clinical trials using digital twins**

E Højbjerre-Frandsen, ML Jeppesen, RK Jensen - 2022

This thesis is a study of approaches to leveraging historical data for increasing power in randomised clinical trials (RCTs) with a continuously measured efficacy outcome. Existing methods based on populating the control arm with a synthetic control arm …

[PDF] **Investigating the relationship between diabetes and frozen shoulder: longitudinal analysis of primary care medical records**

BP Dyer - 2022

Introduction Frozen shoulder, a condition that can cause prolonged pain and disability, has previously been found to be common amongst people with diabetes. This thesis aimed to improve the understanding of the nature of the relationship …

[PDF] **The ecology, distribution and population genetics of amphibians on Haida Gwaii, British Columbia**

R Gamlen-Greene - 2022

Amphibian populations are declining worldwide due to many threats including habitat destruction, disease, non-native species and climate change, and are in dire need of informed conservation strategies. Island populations are particularly at risk …

[PDF] **Spatial analysis of the opioid overdose epidemic in British Columbia**

Z Hu - 2021

Illicit opioid overdose deaths in British Columbia have increased five folds since 2012. Previous studies have identified potential factors that may affect the distribution of fatal and nonfatal overdose risks, such as socioeconomic status, stigma, and …

[PDF] **Changing Facts in Children's Counterfactual Reasoning**

I Grosu, A Cournane – 2022

Counterfactual reasoning involves thinking about possibilities incongruous with the actual world, and being able to choose among them in a principled manner (Lewis (1979), ia). Counterfactual language typically involves a conditional construction …

[PDF] **Estimating Categorical Counterfactuals via Deep Twin Networks**

A Vlontzos, B Kainz, C Lee - 2022

Counterfactual inference is a powerful tool, capable of solving challenging problems in high-profile sectors. To perform counterfactual inference, one requires knowledge of the underlying causal mechanisms. However, causal mechanisms cannot be …

Human-in-the-Loop and Graph Theoretic Aspects of a Smart Control Room

S Ghosh - 2021

Industry 4.0 and Smart manufacturing paradigms aim to make manufacturing processes flexible, enabling the human-in-the-loop to make better decisions and develop the workforce. The dissertation presents the concept of a Smart Control …

[PDF] **Analysis of the relationship between school management practices and the implementation of human resource development in public primary schools in Nyeri county …**

SK Wakori - 2021

Practices adopted by school management play an important role in promoting human resource development dynamics of teachers. Schools ensure that teachers are comfortable while executing their duties. However, in many public primary …

[PDF] **VU Research Portal**

D Coumou

In this lecture, I will of course discuss the type of research that we do, on extreme weather and on the climate system. But I also would like to reflect more broadly on how climate science has developed over the past 10 years, and how I think it will …