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ENHANCING EVIDENCE-BASED DECISION-MAKING: THE ROLE OF AI IN MODERN SCIENTIFC SYNTHESIS

Abstract: In today's globalized and interconnected world, the ability to synthesize large amounts of scientific knowledge for evidence-based decision-making is more critical than ever. However, the exponential growth of scientific publications poses an unprecedented challenge for researchers and policymakers, particularly in socially contested fields like global environmental change. Traditional processes for systematic reviews—an essential methodology for knowledge synthesis—are highly laborious and prone to human bias, which potentially limits the scope and timeliness of generating the necessary evidence.

Here, I address this challenge by exploring the transformative role of Artificial Intelligence (AI), presenting progress on a project focused on developing and implementing AI tools designed to assist and automate key stages of systematic reviews. By applying language models and machine learning algorithms, I demonstrate how AI can optimize the identification, classification, and analysis of relevant literature. Using a previously published review as a proof of concept, and re-evaluating it with the proposed method, I show how these tools can increase efficiency, improve reproducibility, and reduce human error. By automating labor-intensive tasks, AI enables researchers to focus on critical analysis and synthesis, enhancing the transformation of scientific knowledge into reliable and actionable evidence. AI should be regarded as a valuable tool that supports, rather than replaces, scientific expertise in addressing the challenges of knowledge synthesis for evidence-based decision-making.

About the speaker: Dr. Pedro Jaureguiberry is a researcher at the Instituto Multidisciplinario de Biología Vegetal (CONICET-Universidad Nacional de Córdoba), where he specializes in fire ecology and the impacts of human activity on biodiversity. His work explores the role of fire in seasonally dry forests of Argentina, investigating the response of dominant plant species under different land-use scenarios. Additionally, he contributes to large-scale interdisciplinary initiatives like the IPBES Global Assessment Report, where his research on direct drivers of biodiversity loss has provided significant insights into the global environmental crisis. This work complements other research within his group, which integrates ecological and social dimensions to explore the multifaceted relationship between functional diversity and ecosystem services, and to inform sustainable land management practices. He was awarded the prestigious Frontiers Planet Prize International Champion

2024, one of the most important global recognitions in the field of sustainability and biodiversity conservation.
