

Alberto D. Horner

Causal Reasoning for Safe AI · Philosopher of Science and AI Engineer

dohalberto [at] gmail [dot] com · +52 444 600 30 [six][nine] · github.com/HornerAlberto · horneralberto.github.io



Causal reasoning is what intelligence needs to be safe and super.

SAFE

A system is safe when the probability of harm associated with its existence and use is reasonably low. Harm is counterfactual: an undesired outcome that would not have occurred without the system. Safety cannot be specified or checked without causal models.

SUPER

Causal reasoning, as formalized by Judea Pearl, lets a system work out the result of an intervention and reason about scenarios that differ in their conditions but share the same structural mechanisms. A system that does this worse than humans is not superintelligent.

I have argued this as a philosopher of science (M.Sc. thesis at UNAM on machines that reason about causes, GPA 10/10, advised from the Faculty of Computer Science; university ethics teaching) and applied causal methods as an engineer (causal sensitivity analysis for an S&P 500 retailer; AI agents and AI R&D leadership at EY Mexico).

RESEARCH AND WRITING

THESIS AND PAPERS

Machines that think on causes (*Máquinas que piensan causas*)

UNAM · 2023

M.Sc. thesis. Advisor: Dr. Francisco Hernández Quiroz, Faculty of Computer Science.

Argues that intelligent systems capable of formal causal reasoning are epistemically superior to those that are not, because only they can derive the results of interventions and reason about scenarios that keep the same structural mechanisms under different conditions.

Should Causal AI Rule Over Deep Learning?

AMEXCOMP · 2023

Workshop on Causal Discovery CaDis 2023, Mexican Academy of Computing, 12 Dec 2023; presented at INAOE. ISBN 978-607-98941-8-4.

Book review: *Privacy is Power* by Carissa Véliz

Tópicos · 2023

Tópicos, No. 66 (2023), May–August. doi.org/10.21555/top.v660.2656

SHORT ESSAYS ON CAUSAL AI

horneralberto.github.io · biweekly contributor to the *Causal Python* newsletter (causalpython.io), 2025–present. Selected:

- **SAFE Personalized Decision Making** Apr 2026
Uses the counterfactual definition of the probability of harm (Pearl; Tian & Pearl; Mueller & Pearl) to argue for individual-level rather than population-level treatment decisions.
- **SAFE Counterfactual Fairness: take as much as you can** Mar 2026
On an end-to-end estimator for counterfactual fairness and its tunable fairness–accuracy trade-off.
- **SUPER Reading an LLM's Mind with Causal Effects** Jul 2026
On interpretability methods that identify LLM concepts by their causal effect on outputs, and on intervenable features.
- **SUPER Grow your agent wisely** Jul 2026
On treating LLM development and evaluation decisions as causal treatments.

AI ENGINEERING AND LEADERSHIP

EY Global Delivery Services · Senior AI Consultant

2025–present

- Leader of the Mexico AI R&D Center (FY27), with research tracks in agentic business transformation, context engineering, and the Economics of AI.
- AI Leader of the Microsoft Center of Excellence (FY26): grew the team from 5 to 15+ consultants. Best practices and demos for Microsoft Foundry.
- Forward Deployed Engineer: build AI agents for business transformation using OpenAI Platform + Cloud Infrastructure.
- Fortune 100 client: designed the CI/CD strategy for a high-stakes, big-data sales platform (Azure Data Lake, Fabric Lakehouses, Spark) and defined the AI strategy for its developers and business users.

Ventagium Data Consulting · Data Engineer

2023–2025

- S&P 500 retailer: multi-factor causal sensitivity analysis of the drivers of on-time-delivery KPIs.
- ML forecasting (sales and demand) to support client decisions.
- Led data-architecture implementations for 4+ mid-sized companies, from solution design to delivery, including finance and accounting architectures on Azure and Microsoft Fabric.
- Maintained a private Spark-on-Fabric repository that automatically deploys Medallion architectures.

TEACHING		
Universidad Panamericana · <i>Ethics</i> (university level)		2022–2023
Prepa UP · <i>Ethics, Logic and History of Art</i> (high school)		2019–2021
EDUCATION		
Universidad Nacional Autónoma de México (UNAM) · <i>M.Sc. Philosophy of Science</i>		2021–2023
Thesis on causal reasoning in machines (above). GPA 10/10, highest in my cohort; graduated with honors (June 2024). CONAHCYT research scholarship for causal-inference research. Took graduate coursework with physics, computer science and applied-mathematics students, including <i>Nonparametric and Regression Models</i> at the Faculty of Sciences.		
Universidad Panamericana · <i>B.A. Philosophy</i>		2015–2019
Graduated with honors (2021).		
Before the M.Sc.: studied computer science and programming independently. Stanford Online <i>Machine Learning</i> (Andrew Ng), 2022.		
RESEARCH GROUPS AND SEMINARS		
• Causal Inference and Causal Discovery Group, INAOE · led by Dr. Enrique Sucar and Dr. Julio César Muñoz		2023–2025
• History of Philosophy and Mathematics Group, UNAM · led by Dr. Carmen Martínez Adame		2023–2025
• Seminar on Logic, Epistemology and Ethics of AI, Universidad Panamericana · international, interdisciplinary seminar led by Dr. Karen González Fernández; member of the organizing team		2020–2022
• Technology, Environment and the Pursuit of Wisdom, Duke University · one-week seminar (Lumen Christi Institute)		2023
HONORS		
• First place, XIV International Logic Contest, Undergraduate category · Mexican Academy of Logic		2017
• Second place, XV International Logic Contest, Masters category · Mexican Academy of Logic		2018
TECHNICAL SKILLS		
• Causal inference: structural causal models, causal discovery, sensitivity analysis · PyWhy, pgmpy • Machine learning: PyTorch, Keras, scikit-learn; forecasting (RNNs), recommendation (ALS), MRI image classification (neural networks) • Generative AI and agents: AI agents on OpenAI Platform, Microsoft Foundry, and Microsoft Fabric · Databricks Certified Generative AI Engineer Associate (2025) • Data and infrastructure: Python, PySpark, SQL, Apache Spark, Microsoft Fabric, Azure, CI/CD · Microsoft DP-600, DP-700 (2024), AZ-900 (2023)		
LANGUAGES		CIVIC ENGAGEMENT
Spanish (native) · English (full proficiency) · German (limited working proficiency)		• Co-founder and editor, <i>Revista Spes</i>, a magazine on reflective thinking, public life and civic journalism (2020–2024) • One year of social service in Santa María Quiegolani, Oaxaca (2014–2015); one month in Itiatio, Guerrero (2018)