

From Law to Data Governance: Rebuilding from Scratch at the Intersection of Legal Frameworks and AI

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It started with two papers.

During my Master's in Constitutional Justice, I encountered for the first time research that genuinely combined legal analysis with statistical thinking. Then, already working inside the Federal Judiciary of Mexico, I read a study on nepotism in the Mexican judicial system that used three different statistical strategies to measure the same concept. As a lawyer, something immediately felt off: before measuring, you have to define. Those two moments planted a question legal training alone couldn't answer: how do you actually measure what's happening inside an institution you know from the inside?

That question led me toward data science and data governance — and to a harder truth: my last math class had been in high school, over a decade earlier.

This talk is an honest account of that pivot: nearly seven years of hesitation shaped by the belief that choosing a career is a permanent, irreversible decision; the process of rebuilding algebra, functions, and statistics from scratch — calculus being, unexpectedly, the hardest part; and the leap of leaving a stable judicial career for a full-time role in data operations, doubts included.

The slow discovery was this: a non-technical background is not a liability. It is a perspective. Someone who spent eight years inside an institution knows something that no dataset alone can tell you — that before you measure something, you have to define what it means. That is exactly what AI governance needs and rar

AI in Long-Term Care: Practical Tools for Workflow Efficiency, Documentation Support, and Caregiver Well-Being

Charity Nyamuchengwa, clarkson university

This talk shows how practical AI tools can reduce documentation load, streamline caregiver workflows, and improve daily operations in long-term care facilities. Using lightweight, privacy-safe systems including a caregiver-support chatbot, workflow guidance tools, and synthetic early-warning models we explore how AI can boost efficiency and support caregiver well-being without relying on patient-specific data. Attendees will leave with a clear understanding of how applied AI can make long-term care safer, smoother, and more sustainable.

Which one to use, traditional Algorithms or AI? Approaches for Computational Problem-Solving

Jae Sook Cheong, AMExNet

There are many technologies available to solve problems, such as AI, traditional exact algorithms, probabilistic approaches, and many more. To apply the right technology effectively, we must understand which types of problems each technology is best suited for. In this talk, we will explore different computing models

and problem space, and see how AI approaches differ from other algorithms and approaches. This will help us determine when to use AI and when other approaches are more appropriate.

Optimizing Portfolio Allocation with Unsupervised Machine Learning

Weijie Pang, Wentworth Institute of Technology

Unsupervised learning offers a data-driven pathway to portfolio construction without relying on strong parametric assumptions. In this talk, I present a framework that leverages three clustering techniques—k-means, self-organizing maps (SOM), and fuzzy c-means—to group securities based on shared risk and performance characteristics. From each cluster, representative assets are selected to form diversified portfolios using three simple selection rules: highest average closing price, highest return, and lowest volatility.

I evaluate the resulting portfolios through cumulative return analysis and benchmark their performance against the S&P 500 and the 10-Year Treasury yield. To examine robustness, I further conduct stress tests during two major market disruptions: the 2008 financial crisis and the 2020 COVID-19 pandemic.

The comparative analysis highlights how different clustering methods influence portfolio composition and performance. Overall, the results demonstrate the potential of unsupervised machine learning to enhance diversification and deliver competitive performance using only publicly available data. This work provides practical insights into integrating clustering techniques into systematic portfolio design.

