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COLLOQUIUM

Statistics and Statisticians in Data Science, Machine Learning and Artificial Intelligence

Dr Farai Mlambo (Wits Business School)

DATE: Monday, 5 May 2025 | 16h00–17h00 SAST
VENUES:

- Neelsie Cinema, Stellenbosch University
- Online

--- A recording of the talk will be published on the NITheCS YouTube channel afterwards ---

ABSTRACT

As the fields of data science, machine learning, and artificial intelligence (AI) continue to evolve, statistics remains the intellectual and methodological foundation upon which much of this progress is built. This talk explores the indispensable role of statisticians in shaping these domains, both historically and in contemporary practice. From the formulation of inference procedures and probabilistic models to the design of experiments and evaluation metrics, statistics provides the tools to reason under uncertainty, validate predictions, and ensure interpretability. The talk reflects on how the insights of pioneers such as John Tukey and Frederick Mosteller anticipated many of today's challenges, advocating for data exploration, interdisciplinary thinking, and computational integration. Statisticians today contribute not only as methodologists but also as educators, software developers, and ethical stewards in algorithmic systems. Whether through developing robust models, designing reproducible workflows in R or Python, or embedding statistical thinking in machine learning pipelines, their expertise is vital. As we navigate a world increasingly shaped by data-driven decisions and AI applications, this talk argues for a renewed recognition of statisticians as central to innovation, bridging theory and application, ensuring rigour, and fostering trustworthy, interpretable systems.

BIOGRAPHY

Dr Farai Mlambo is a Senior Lecturer in Digital Business and Data Analytics at Wits Business School and a Fellow at the Wits MIND Institute. He directs the Postgraduate Diploma in Digital Business and leads the Statistical Machine Learning, Data Science, and Analytics Lab. His research focuses on Bayesian methods, uncertainty quantification, and AI applications in business, healthcare, and finance. With a PhD in Mathematical Statistics, Dr Mlambo has over a decade of experience teaching and supervising projects in statistics, data science, and business analytics. His teaching philosophy emphasises critical thinking, practical relevance, and interdisciplinary collaboration.



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