

## NITheCS COLLOQUIUM:

# AI and Chess: A Retrospective and Future Story

Dr Ulrich Paquet (DeepMind and African Institute of Mathematical Sciences)

**Attend in person at the Neelsie Cinema\* or online**

\*1st Floor The Neelsie Langenhoven Student Centre, Stellenbosch University

**Monday, 20 February 2023 | 16h00 – 17h00 SAST**

Cheese and wine will be served after the event

### ABSTRACT

AI and chess have a shared history, from the "Mechanical Turk" to modern-day advances. This talk will cover some part of the story! It will include AlphaZero, a neural network-powered reinforcement learner. Seventy years ago, Alan Turing conjectured that a chess-playing machine could be built that would self-learn and continuously profit from its own experience. The AlphaZero system passed this milestone. How did it do it? What did it learn from its experience and how did it encode it? Did it learn anything like a human understanding of chess, in spite of having never seen a human game? We will partially answer some of these fascinating questions in the talk.

### BIOGRAPHY

Ulrich Paquet is the new director of the African Institute of Mathematical Sciences in South Africa. He has a dual position in DeepMind, one of the world's foremost AI companies, where he is a senior staff research scientist. His most recent work on AlphaZero includes a collaboration with Vladimir Kramnik on how small rule adjustments to chess would alter the game at a superhuman level. He is deeply interested in how AlphaZero discovers and acquires chess knowledge automatically, and has done research showing how it represents human chess concepts.

He holds a PhD in machine learning from the University of Cambridge. Ulrich joined DeepMind in 2016, and has worked in tech companies such as Microsoft, Imense, VocalIQ and Apple before. He was on the Xbox One launch team, where he co-developed the core of the recommender system. Having grown up in South Africa, he cares deeply about the growth of mathematical sciences in Africa. In his spare time, he is a co-founder and co-director of Deep Learning Indaba, a grassroots initiative to strengthen machine learning in Africa. To date, it has run AI schools in almost 30 countries in Africa, with many flowers now blooming between the grass roots!



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