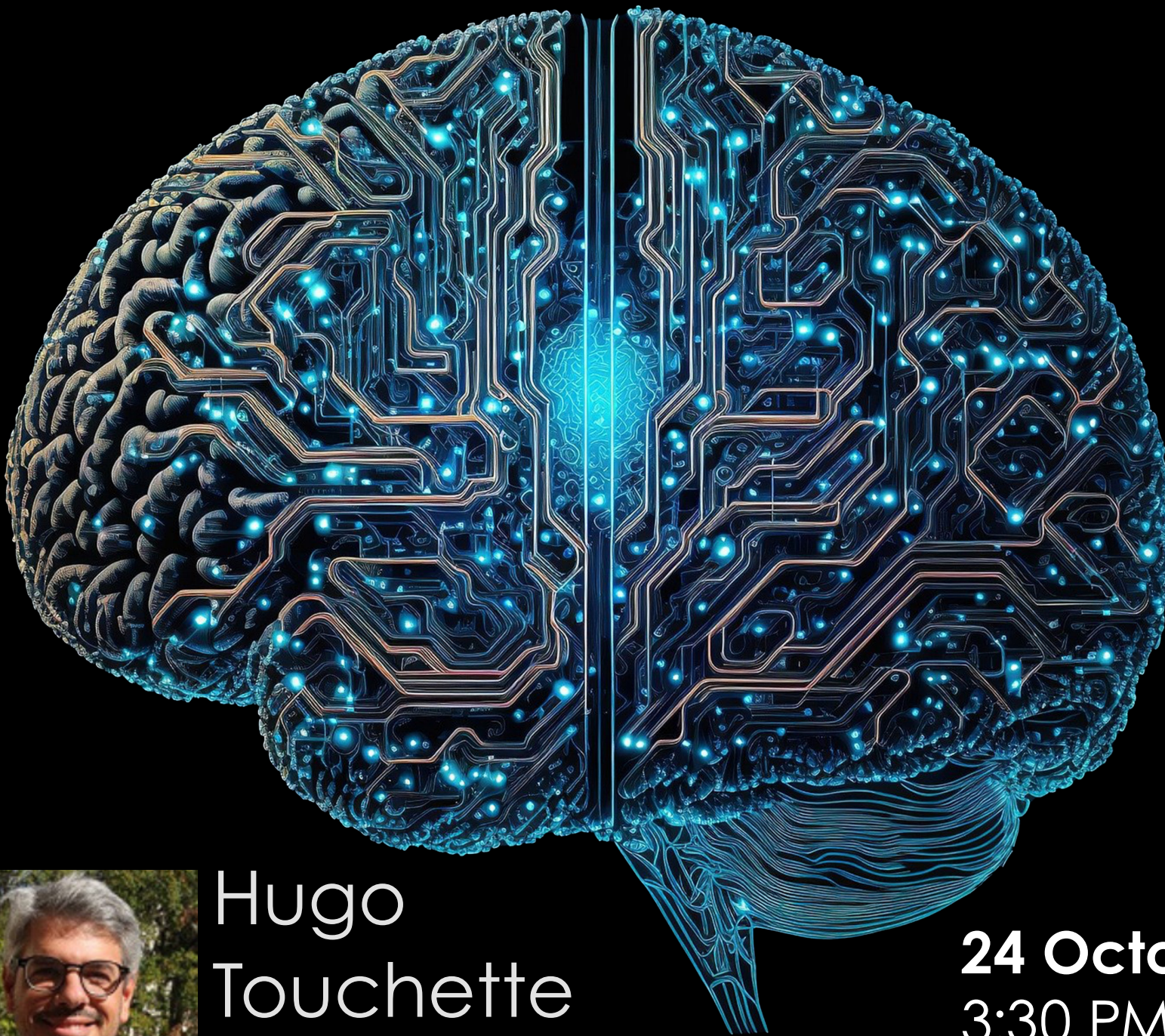




ICTS SPECIAL COLLOQUIUM

# The machine learning contributions behind the 2024 Physics Nobel Prize

I will give an overview of the contributions that John Hopfield and Geoffrey Hinton made to machine learning and artificial intelligence, which led them being awarded the 2024 Physics Nobel Prize for 'foundational discoveries and inventions that enable machine learning with artificial neural networks'. The presentation will be basic, starting with an explanation of what machine learning is and how neural networks work. From there, I will explain the contributions that Hopfield and Hinton made in the 1980s in developing new and efficient neural networks, powering the machine learning revolution that we see now in everyday life and science.



**Hugo Touchette**

Stellenbosch University, South Africa

Prof. Hugo Touchette is a Professor of Applied Mathematics at the Stellenbosch University, South Africa. His research covers many areas of applied mathematics and theoretical physics and his main

specialty is the theory of large deviations. Prof. Touchette has been a lecturer and a Senior lecturer in Applied Mathematics at University of London, UK and a Chief Researcher at National Institute for Theoretical Physics South Africa. He obtained his PhD in Physics from the McGill University, a master's in Mechanical Engineering from Massachusetts Institute of Technology and Bachelor's in Physics from the Université de Sherbrooke.

**24 October 2024**  
**3:30 PM - 5:00 PM**

Zoom link: <https://shorturl.at/23UJJ>

Meeting ID: 964 6949 1229

Passcode: 202030

Emmy Noether  
Seminar Room, ICTS  
Bengaluru