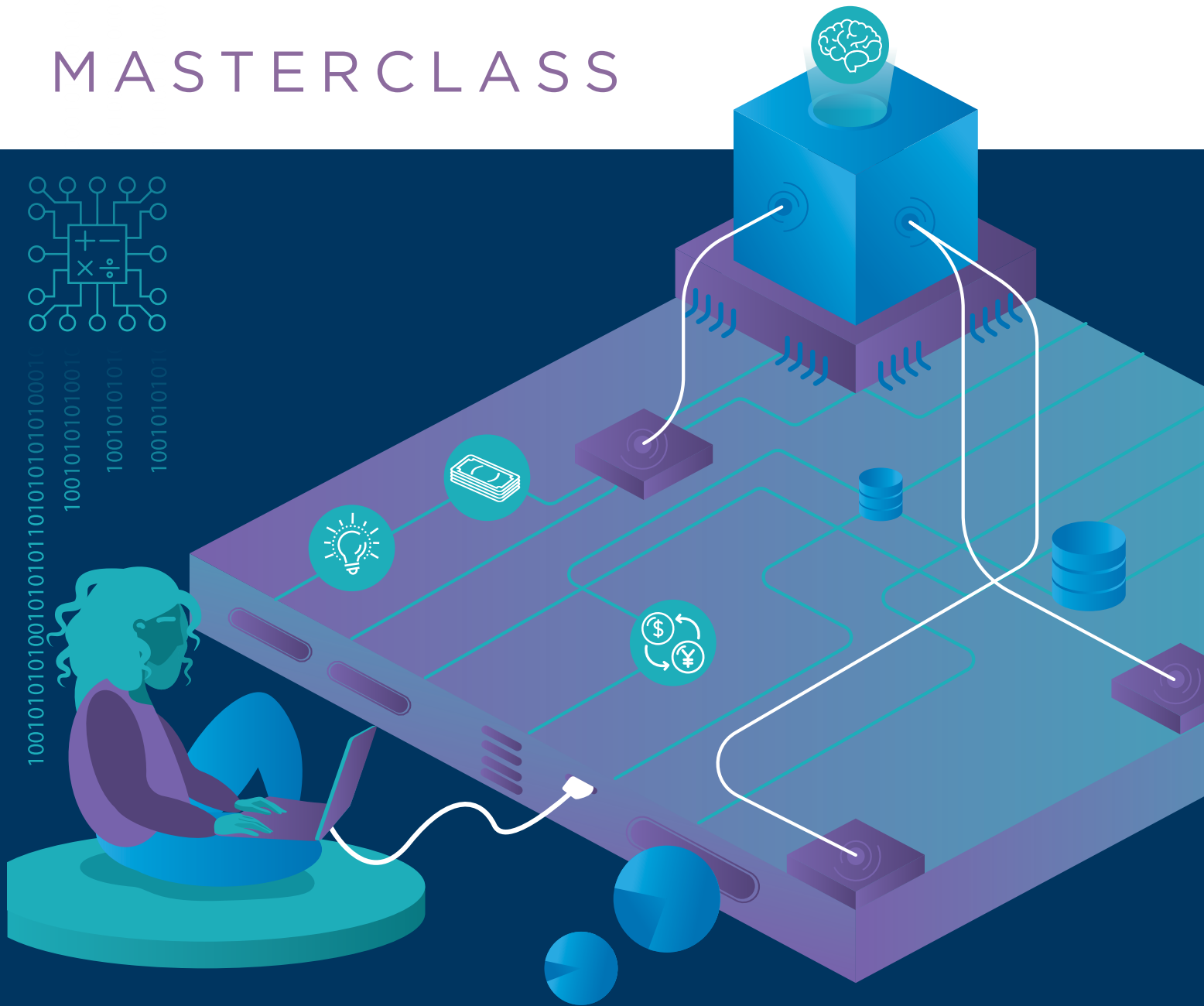


# MACHINE LEARNING



## FOR OPTION PRICING

## MASTERCLASS



### COURSE HIGHLIGHTS

This workshop provides a detailed overview of **machine learning techniques applied to finance**. We offer insights into **the latest use of such techniques** for modelling financial markets, where we focus on pricing and calibration.

Aside from the theoretical underpinnings, we give **practical guidance** and **live demonstrations** of the computational methods involved. After introducing the subject, we cover Artificial Neural Networks and Gaussian Process Regression in detail, and show how such methods can be applied to option **pricing problems, xVA calculation and hedging**. We demonstrate how to use existing pricing libraries to interact with machine learning environments in Python using Keras, Tensorflow, SciKit and PyTorch. Further examples for Gaussian Process Regression are provided in Matlab and Python.

## COURSE MATERIAL



### Machine Learning techniques

(supervised, unsupervised, reinforcement learning, etc.)

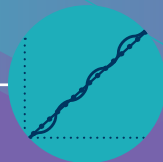


### Artificial Neural Networks

(Feed-forward, Convolutional, Recursive, Adversarial, etc.)



### The mathematics of Neural Networks



### Gaussian Process Regression for option pricing



### Deep learning for pricing

using the Heston and other stochastic volatility models



### Deep learning for calibration

of stochastic volatility models



### Implementation and Examples

(Matlab code and Jupyter notebooks provided)

## ABOUT THE SPEAKERS

**Jörg Kienitz** is a partner at [Quaternion Risk Management](#) and owner of the [Finciraptor website](#). He is primarily involved in consulting on the development, implementation and validation of models. Jörg lectures at the University of Wuppertal as an Assistant Professor and is an Adjunct Associate Professor at UCT. He has addressed major conferences including Quant Minds and WBS Quant Conference.

Jörg has authored four books “Monte Carlo Object Oriented Frameworks in C++” (with Daniel J. Duffy) “Financial Modelling” (with Daniel Wetterau), “Interest Rate Derivatives Explained I” and “Interest Rate Derivatives Explained II” (with Peter Caspers).

**Nikolai Nowaczyk** is a senior consultant at [Quaternion Risk Management](#). He is primarily involved in consulting on model validation, model development and model implementation. He has given talks at Mathematical Finance and Tech conferences on financial modeling, numerical methods and data analytics. He has also contributed to the well-known SciPy library.

## DETAILS AND REGISTRATION

**Venue:** Protea Hotel Balalaika, Sandton, Johannesburg  
**Dates:** 5 and 6 March 2020, 09:00 to 17:00  
**Cost:** Practitioners R6 000  
Academics and students R3 500

**CLICK HERE TO REGISTER**



Register online **before 28 February 2020**.

Please contact conference organiser: Fatima Saban (UCT CMC), for Group Invoices and General Enquiries: [Fatima.Saban@uct.ac.za](mailto:Fatima.Saban@uct.ac.za)