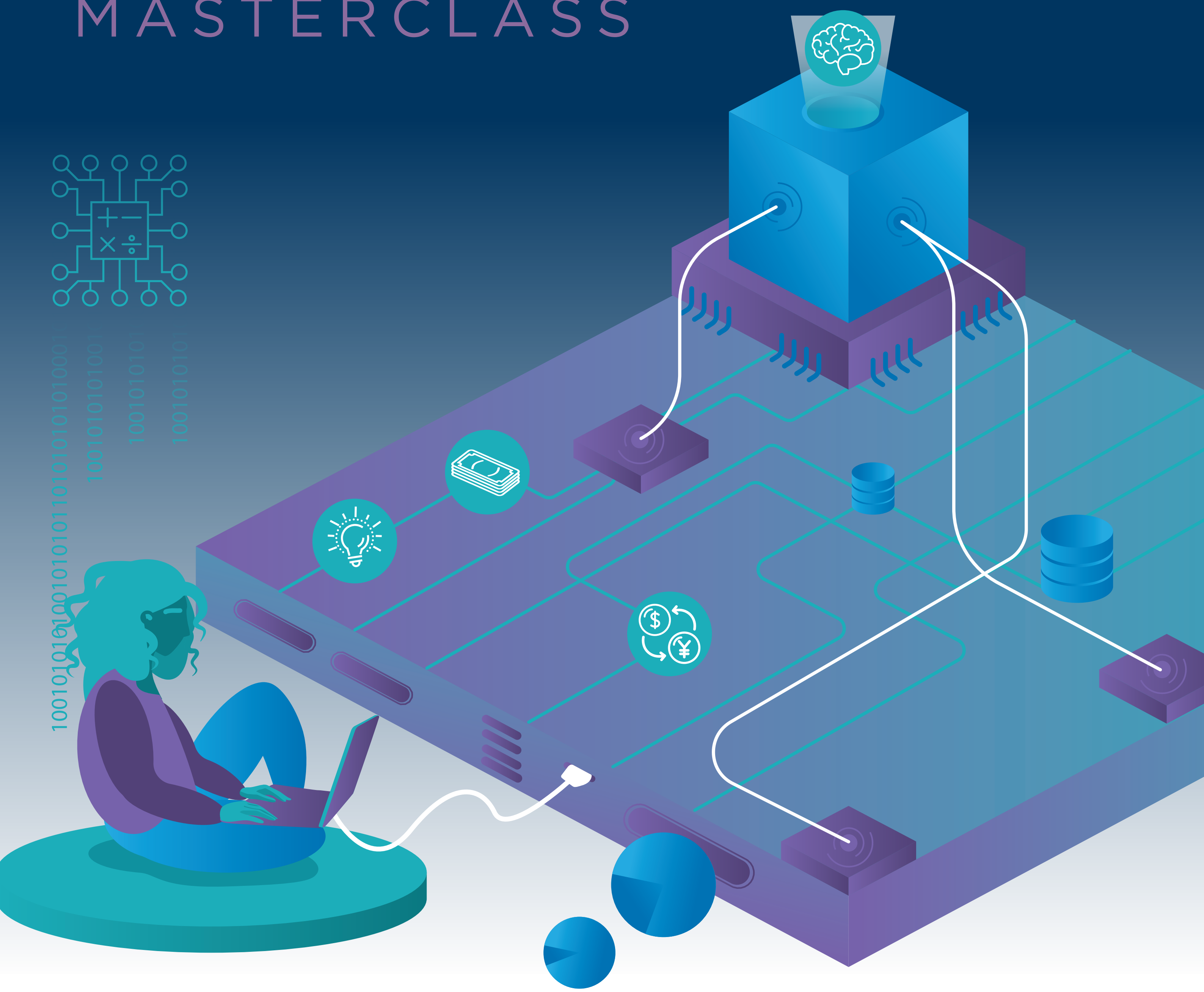
MACHINE LEARNING
FOR QUANTITATIVE FINANCE
MASTERCLASS

AIFMRM
DEVELOP | SHAPE | ADVANCE



COURSE HIGHLIGHTS

This workshop provides a detailed overview of **machine learning techniques** and their **application to quantitative finance**. We cover a range of techniques including **regression**, **k-means**, **kernel methods**, **neural networks**, and **mixture models**.

Aside from theoretical underpinnings such as **backpropagation** (AAD) and **expectation maximisation**, we give **practical guidance** and **live presentations** of the **computational methods involved**. After introducing the subject and outlining the basic concepts, we **demonstrate numerous methods** for **practical applications**. We cover **artificial neural networks for pricing**, **hedging and calibration**, and **Gaussian machine learning** for exotic high-dimensional Bermudans or **calibration of local stochastic volatility models**. Advanced generative methods like **variational autoencoders** (VAEs) or **generative adversarial networks** (GANs) are used to train on **market samples**, creating synthetic data with specific features that **reflect market data**. Some recent developments for feature selection are also covered, such as the **signature of rough paths**.

COURSE MATERIAL

- **Overview** (k-means, SVM, kernel methods, regression, etc.)
- **Machine Learning Techniques** (supervised, unsupervised, reinforcement learning, etc.)
- **Artificial Neural Networks** (feed-forward, convolutional, recursive, adversarial, GAN, VAE, etc.)
- **The Mathematics of Neural Networks** (backpropgation, stochastic gradient descent, etc.)
- **Gaussian Machine Learning, Gaussian Process Regression** and **Gaussian Mixture Models** for high dimensional exotic bermudans or stochastic local volatility calibration
- **Deep Learning for Pricing, Calibration and Hedging,** using the Heston and other stochastic volatility models
- **Generative Models** for financial data and applications to time series
- **Implementation and Examples** (Python code and Jupyter notebooks provided)

ABOUT THE SPEAKER

Jörg Kienitz is a partner at **Quaternion Risk Management** (the Quantitative Service Unit of Acadia) and is the owner of the **Finciraptor website**. He consults on the development, implementation, and validation of models. Jörg is an assistant professor at the University of Wuppertal and an adjunct associate professor in AIFMRM at UCT. He regularly addresses major conferences, including Quant Minds and the WBS Quant Conference.

Jörg has authored four books, *Monte Carlo Frameworks* (with Daniel J. Duffy), *Financial Modelling* (with Daniel Wetterau), and *Interest Rate Derivatives Explained I and II* (with Peter Caspers). He also co-authored research articles that appeared in leading journals like Quantitative Finance, RISK or Mathematics in Industry.

DETAILS AND REGISTRATION

CLICK HERE TO REGISTER

Venue: Protea Hotel Balalaika, Sandton, Johannesburg
Dates: 27 and 28 October 2022, 09:00 to 17:00
Cost: Practitioners R6 000
Academics R3 000
Students R1 000

Register online **before 20 October 2022.**

Please contact:

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