AIFI

ARTIFICIAL INTELLIGENCE
FINANCE INSTITUTE

WINTER BOOTCAMP

FEBRUARY 5th – FEBRUARY 16th 2024
ONLINE

ABOUT

The Artificial Intelligence Finance Institute's (AIFI) mission is to be the world's leading educator in the application of artificial intelligence to investment management, capital markets and risk. We offer one of the industry's most comprehensive and in-depth educational programs, geared towards investment professionals seeking to understand and implement cutting edge AI techniques.

Taught by a diverse staff of world leading academics and practitioners, the AIFI courses teach both the theory and practical implementation of artificial intelligence and machine learning tools in investment management. As part of the program, students will learn the mathematical and statistical theories behind modern quantitative artificial intelligence modeling. Our goal is to train investment professionals in how to use the new wave of computer driven tools and techniques that are rapidly transforming investment management, risk management and capital markets.

COURSE LOGISTICS

Online program:
February 5th – February 16th 2024

40 Hours: Lectures + Practice + Speakers

Evaluation: Exam + Project. Certificate

Course Fee: $3,995

SUPER EARLY BIRD DISCOUNT

20% until 15th December 2023

EARLY BIRD DISCOUNT
10% until 12th January 2024

This course is for

• Quantitative Analysts
• Computer Scientists
• Risk Managers
• Traders
• Investment Managers
• Data scientists

We will give a Python Refresher and Mathematics

Refresher/Primer at the beginning of the course.

THE FACULTY

Miquel Noguer Alonso PhD – *Co-Founder & Chief Science Officer, Artificial Intelligence Finance Institute – AIFI*

Miquel Noguer is a financial markets practitioner with more than 20 years of experience in asset management, he is currently Head of Development at Global AI (Big Data Artificial Intelligence in Finace company) and Head on Innovation and Technology at IEF.

He worked for UBS AG (Switzerland) as Executive Director.for the last 10 years. He worked as a Chief Investment Office and CIO for Andbank from 2000 to 2006.

He is professor of Big Data in Finace at ESADE and Adjunct Professor at Columbia University teaching Asset Allocation, Big Data in Finance and Fintech. He received an MBA and a Degree in business administration and economics in ESADE in 1993. In 2010 he earned a PhD in quantitative finance with a Summa Cum Laude distinction (UNED – Madrid Spain).

Matthew Dixon – *Technical Co-Founder & Chief Risk OfficerTechnical Co-Founder & Chief Risk Officer CFX Labs*

FinTech entrepreneur and innovator in the area of statistical and mathematical algorithms with a software engineering background. Author of a Machine Learning in Finance textbook and several Journal papers on algorithms and models for machine learning, blockchain based technologies. RISK Magazine's Buy-side Quant of the Year (2022). College of Computing Dean's Excellence in Research Award (Junior Professor level), 2021. Tenured Professor (currently on leave) and PI/Co-PI of research funding from Intel, Dell, NASA JPL, and NSF. Research featured in the Financial Times, Bloomberg Markets, Barron's Advisor.

Member of the CFA NY Quant Investing Committee. Chartered Financial Risk Manager (FRM). Editorial Associate for the World Scientific Annual Review of FinTech and the AIMS Journal of Dynamics & Games. Google Summer of Code Mentor for the R Statistical Computing Project (2017). Chair of the IEEE/ACM Workshop on High Performance Computational Finance (2010-2015).

Petter Kolm – *Clinical Full Professor and Director of the M.S. in Mathematics in Finance Program, Courant Institute of Mathematical Sciences, New York University & Partner, CorePoint-Partners.com*

Petter Kolm is Clinical Full Professor and Director of the M.S. in Mathematics in Finance Program at the Courant Institute of Mathematical Sciences, New York University, since 2007. He is also Partner at CorePoint-Partners.com. Previously, Petter worked in the Quantitative Strategies group at Goldman Sachs Asset Management, developing proprietary investment strategies, portfolio and risk analytics in equities, fixed income and commodities.

Petter is the co-author of numerous academic journal articles and several well-known finance books including, Financial Modeling of the Equity Market: From CAPM to Cointegration (Wiley, 2006); Trends in Quantitative Finance (CFA Research Institute, 2006); Robust Portfolio Management and Optimization (Wiley, 2007); and Quantitative Equity Investing: Techniques and Strategies (Wiley, 2010).

Petter is a frequent speaker, panelist and moderator at academic and industry conferences and events. He is a member of the editorial boards of the International Journal of Portfolio Analysis and Management (IJPAM), Journal of Financial Data Science (JFDS), Journal of Investment Strategies (JoIS), and Journal of Portfolio Management (JPM). Petter is an Advisory Board Member of Alternative Data Group (ADG), AISignals and Operations in Trading (Aisot), Betterment (one of the largest robo-advisors) and Volatility and Risk Institute at NYU Stern. He is also on the Board of Directors of the International Association for Quantitative Finance (IAQF) and Scientific Advisory Board Member of the Artificial Intelligence Finance Institute (AIFI).

As an advisory board member, consultant, and expert witness, Petter has provided services in areas including alternative data, data science, econometrics, forecasting models, high frequency trading, machine learning, portfolio optimization with transaction costs, quantitative and systematic trading, risk management, robo-advisory, smart beta strategies, trading strategies, transaction costs, and tax-aware investing.

He holds a Ph.D. in Mathematics from Yale University; an M.Phil. in Applied Mathematics from the Royal Institute of Technology, Stockholm, Sweden; and an M.S. in Mathematics from ETH Zurich, Switzerland

Gordon Ritter – *Founder, CIO, Ritter Alpha, LP*

Gordon Ritter completed his PhD in mathematical physics at Harvard University in 2007, where his published work ranged across the fields of quantum computation, quantum field theory, differential geometry and abstract algebra.

Prior to Harvard he earned his Bachelor's degree with honours in Mathematics from the University of Chicago. Gordon is currently a senior portfolio manager at GSA Capital, and leader of a team trading a range of high-Sharpe absolute return strategies across geographies and asset classes. GSA Capital has won the Equity Market Neutral & Quantitative Strategies category at the Eurohedge awards four times, with numerous other awards including in the long-term performance category.

Stefan Jansen – *Professor, Founder & Lead Data Scientist, Applied AI*

Stefan is the founder and Lead Data Scientist at Applied AI. He advises Fortune 500 companies, investment firms and startups across industries on data & AI strategy, building data science teams, and developing machine learning solutions. Before his current venture, he was a partner and managing director at an international investment firm where he built the predictive analytics and investment research practice. He also was a senior executive at a global fintech company with operations in 15 markets. Earlier, he advised Central Banks in emerging markets, consulted for the World Bank, and has worked in six languages across Asia, Africa, and Latin America. Stefan holds Master degrees in Computer Science from Georgia Tech and in Economics from Harvard and Free University Berlin and is a CFA Charterholder. He has also been teaching data science at Datacamp and General Assembly.

Tim Leung – *Boeing Professor of Applied Math; Director of Computational Finance & Risk Management, University of Washington*

Tim Leung is the Boeing Full Professor in the Department of Applied Mathematics and the Director of the Computational Finance & Risk Management (CFRM) program at University of Washington in Seattle. Previously, he was a tenure-track Assistant Professor in the Department of Applied Mathematics & Statistics at Johns Hopkins University and in the Department of Industrial Engineering & Operations Research at Columbia University in New York City. He obtained his BS from Cornell University and PhD from Princeton University. His research in Quantitative Finance has been funded by the National Science Foundation (NSF). He has published over 60 peer-reviewed articles and two books respectively, on the topics of Mean Reversion Trading, and ETFs. Professor Leung served as the Chair for the INFORMS Finance Section and Vice Chair for the SIAM Activity Group on Financial Mathematics & Engineering. He is the founding editor of the book series, Modern Trends in Financial Engineering, and is also on the editorial board of multiple journals, including Applied Mathematical Finance, SIAM Journal on Financial Math, IEEE Intelligent Systems, and Stochastic Models.

Nicole Königstein – *Data Scientist*

Nicole Königstein is a distinguished Data Scientist and Quantitative Researcher, currently working as Data Science and Technology Lead at impactvise, an ESG analytics company, and as Head of AI and Quantitative Research at Quantmate, an innovative FinTech startup focused on alternative data in predictive modeling. Alongside her roles in these organizations, she serves as an AI consultant across diverse industries, leading workshops and guiding companies from the conceptual stages of AI implementation through to final deployment.

As a guest lecturer, Nicole shares her expertise in Python, machine learning, and deep learning at various universities. She is a regular speaker at renowned AI and Data Science conferences, where she conducts workshops and educational sessions. In addition, she is an influential voice in the data science community, regularly reviewing books in her field and offering her insights and critiques. Nicole is also the author of the well-received online course, "Math for Machine Learning.

BOOTCAMP programme

Day 1	Monday, February 05 2024		
MODULE	CONTENTS	HOUR	PROFESSOR
1	**Artificial Intelligence in Finance**	09.00 am - 12.00 pm EST	Dr. Miquel Noguer
2	**Big Data in Finance Modeling I**		
	a. Modeling		
	b. Modeling Framework		
	c. Quantitative Finance		
3	**Supervised Learning I**		
	a. Supervised Learning Algorithm		
Speaker	**Big Data in Finance**	12.00 pm - 01.00 pm EST	William J. Kelly
Speaker	**PINN**	01.00 pm - 02.00 pm EST	Julian Antolin

Day 2	Tuesday, February 06 2024		
MODULE	CONTENTS	HOUR	PROFESSOR
2	**Supervised Learning I**	09.00 am - 12.00 pm EST	Dr. Miquel Noguer
	a. Supervised Learning Framework		
	b. NN, SVM, CART, XgBoost		
1	**Python and coding - Primer**	12.00 pm - 02.00 pm EST	Nicole Köenigstein
	a. Python basics		
	b. Exercises		

Day 3	Wednesday, February 07 2024		
MODULE	**CONTENTS**	**HOUR**	**PROFESSOR**
3	**Supervised Learning II**	09.00 am - 11.00 am EST	Yaxoing Zeng
	a. Ensemble models		
	c. Bagging: Random Forests		
	d. Boosting: Adaboost and XGBoost		
Speaker	**Factor Models and Machine Learning**	11.00 am - 12.00 pm EST	Tony Guida
Speaker	**Mathworks - Explainable AI**	12.00 pm - 01.00 pm EST	Arpit Narain
Speaker	**Climate Change**	01.00 pm - 02.00 pm EST	Robert Litterman

Day 4	Thursday, February 08 2024		
MODULE	**CONTENTS**	**HOUR**	**PROFESSOR**
4	**Unsupervised Learning**	09.00 am - 11.00 am EST	Stefan Jansen
	a. Unsupervised Learning Rationale		
	b. Clustering and Dimension Reduction		
	c. Auto-Encoders		
2	**Python and coding - Machine Learning**	11.00 am - 01.00 pm EST	Nicole Königstein
	a. Python Sci kit Learn		
	b. Exercises		
Speaker	**High Frequency Deep Learning**	12.00 pm - 01.00 pm EST	Petter Kolm

Day 5	Friday, February 09 2024		
MODULE	**CONTENTS**	**HOUR**	**PROFESSOR**
Speaker	**Deep Learning for Mathematics**	09.00 am - 10.00 am EST	Francois Charton
Speaker	**Machine Learning in Finance**	10.00 am - 11.00 am EST	Marcos L d Prado
5	**Deep Learning**	11.00 am - 02.00 pm EST	Stefan Jansen
	a. The mathematics of deep learning		
	I. Mathematical definition		
	II. Optimization and Regularization		
	b. Neural Networks Architectures		
	C. Deep learning Asset Pricing and Trading		

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Day 6	Monday, February 12 2024		
MODULE	CONTENTS	HOUR	PROFESSOR
5	**Deep Learning**	09.00 am - 12.00 pm EST	Dr. Matthew Dixon
	b. Neural Networks Architectures		
	II. Recurrent Neural Networks		
	III. Long Short Term Memory Networks		
	IV. Convolutional Neural Networks		
	V. Generative Adversarial Networks		
6	**Generative Finance**	12.00 pm - 02.00 pm EST	David Pacheco Aznar

Day 7	Tuesday, February 13 2024		
MODULE	CONTENTS	HOUR	PROFESSOR
7	**Reinforcement Learning**	09.00 am - 12.00 pm EST	Dr. Matthew Dixon
	a. Reinforcement Learning in Finance		
	b. RL in Dynamic Rep and Hedging		
	c. Markov Decision processes		
	d. Taxonomy of RL		
	e. Tabular Learning and Bellman Equation		
3	**Python and coding - Deep Learning**	12.00 pm - 02.00 pm EST	Nicole Köenigstein
	a. Python Sci kit Learn		
	b. Exercises		

Day 8	Wednesday, February 14 2024		
MODULE	CONTENTS	HOUR	PROFESSOR
8	**Reinforcement Learning II**	09.00 am - 12.00 pm EST	David Pacheco Aznar
	a. Reinforcement Learning Definitions		
	b. Trading Example		
	b. Distributional Reinforcement Learning		
Speaker	**Reinforcement Learning in Finance**	12.00 pm - 01.00 pm EST	Gordon Ritter

Day 9	Thursday, February 15 2024		
MODULE	**CONTENTS**	**HOUR**	**PROFESSOR**
9	**Natural Language Processing**	09.00 am - 12.00 pm EST	Dr Miquel Noguer
	a. NLP Pipeline		
	b. Traditional NLP		
	c. Transformers		
	d. Math with words (TF-IDF vectors)		
	e. NLP Deep Learning		
Speaker	**LLM's in Finance**	12.00 pm - 01.00 pm EST	Arpit Narain
Speaker	**LLM's in Investment Management**	1.00 pm - 02.00 pm EST	Bhaskarjit Sarmah

Day 10	Friday, February 16 2024		
MODULE	**CONTENTS**	**HOUR**	**PROFESSOR**
10	**AI in Finance Q&A**	09.00 am - 10.00 am EST	Dr Miquel Noguer
Speaker	**FinEAS Sentiment Model**	10.00 am - 11.00 am EST	Asier Gutiérrez
Speaker	**GlobalAI**	11.00 am - 12.00 pm EST	Richard Rothenberg
Speaker	**Reinforcement Learning**	12.00 pm - 1.00 pm EST	Dr Igor Halperin

Artificial Intelligence in Finance Institute

REGISTRATION FORM

Regular Course Fee

☐ Full Course Fee $3,995

Super Early Bird Discount

☐ 20% discount 15th December 2023

Early Bird Discount

☐ 10% discount until 12th January 2024

Discount code

VOLUME DISCOUNT: If 2 or more people from your institution wish to take the course please contact us.

DELEGATE DETAILS
NAME:
ORGANISATION:
JOB TITLE:
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ADDRESS:
ZIPCODE:
TELEPHONE:
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NATIONALITY:
DATE:
SIGNATURE:

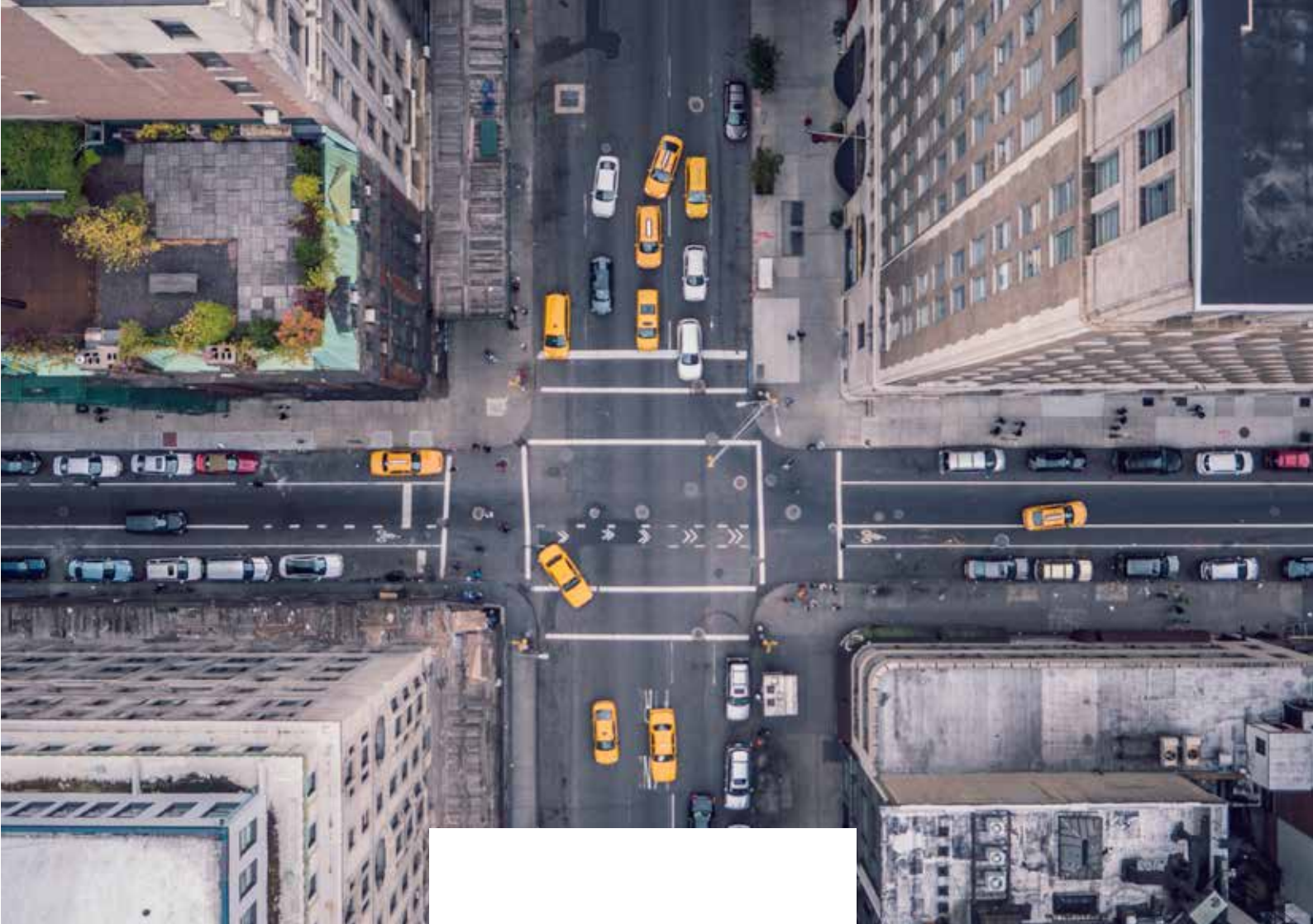**To register, please scan and email the completed booking form to:**

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