



# Geometric Progression

Innovate, Implement, Inspire with AI.

## A Complete Overview of Artificial Intelligence in Plain English (with a Financial Markets Focus)

Ready to be future-proof? Dive into the exhilarating world of Artificial Intelligence with our jam-packed one-day course! Will you be a passive spectator or an active participant in the unstoppable tide of technological transformation?

"Artificial Intelligence", "Machine Learning", "Deep Learning", and "ChatGPT" have become the trending buzzwords across the entrepreneurial scene and policy-making corridors. Yet, there exists a chasm between public perceptions influenced by Hollywood and social media and the actual potential of these tech marvels.

In an era where tech giants like OpenAI, Google, Facebook, Amazon, NVIDIA, Microsoft, and Apple are pushing the boundaries of AI, even small-scale enterprises and startups can seize its advantages. Supercharge your data analytics, automate your business processes, and outshine your competition with AI!

Embark on this exhilarating journey of AI with us, specifically designed for people eager to decrypt the AI enigma. You'll get to grasp the essence of AI, ML, DL, and natural language processing technologies like ChatGpt and Google Bard in plain English, without the intimidating math. With Mark as your guide, using witty analogies, eye-catching visuals, and insightful videos, we will help you decipher why AI has become the talk of the town and how to leverage it through real-world examples. We're all about ensuring you grasp the AI lingo and are ready to harness its power with confidence!

Your day of discovery will feature:

- The captivating backstory of AI and the triggers of its recent surge.
- A jargon-busting session covering all AI terminologies from ANI to AGI and the AI singularity.
- A clear-cut distinction between Artificial Intelligence, Machine Learning, and Deep Learning.
- A sneak peek into the mystic world of Supervised vs Unsupervised learning.
- An easy-to-understand walk-through of various machine learning algorithms, complete with demos.
- A deep dive into AI and ML applications currently revolutionizing business and finance.
- An interactive session on Neural Networks, GANs, Reinforcement Learning, and XAI (Explainable AI).
- A hands-on exploration of Natural Language Processing technologies like ChatGpt, Google Bard, Hugging Face, and more.
- A reality check on the risks and ethics of AI: Are we headed towards a sci-fi apocalypse?
- An in-depth analysis of AI's influence on businesses, financial services, governments, and regulatory bodies.

Refer to the detailed agenda overleaf for more information. All attendees will receive comprehensive course materials electronically, videos, and a host of links for deeper dives.

Be the change, decipher AI, and disrupt your world. It's time to step into a day that's bound to be fun, enlightening, and downright awe-inspiring!





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**Duration:** 1 day.

**Pre-requisites:** None

**Tutor: Mark Raffaelli CFA,FRM**

Mark is a practising CFA Charterholder and Fellow member of the Global Association of Risk Professionals (FRM). Mark's extensive experience includes:

- Development of quantitative financial models for surveillance, performance attribution, price validation, price models, risk and automation.
- Developments of Apps for the investment and insurance industry.
- Machine Learning and Deep Learning with Sklearn and Tensorflow in the Financial Markets for Banks, Asset Managers and general business.
- Trading in Spot & Derivative Products professionally.
- Fund & Bank consulting regarding valuations, curves, Var, surveillance and market abuse.
- Mark programs in: Python, Javascript (including Angular and Ionic), Php, Excel VBA, JAVA & ".net".



Those who have attended Mark's courses will know about his passion and ability to cut through jargon, simplify technical issues and provide real life examples.

## Comments from this Course:

- "Exceptional and comprehensive overview especially considering the time frame of a 1 day session."
- "I found the course easy to follow and you don't need to be a techie. The volume of the material shared was huge so at the end of the day I was pretty tired trying to absorb all the information. However, everything was quite valid, insightful and useful."
- "Thanks Mark - Great Course. You have scared me into action."
- "Awesome Mark. You will see me at your machine learning workshops."

## What makes Geometric Progression different from other providers:

- We don't regurgitate traditional textbooks; instead we share real life experiences.
- We explain all the products as they relate to your own lives in plain English.
- We practice what we preach.
- We love multimedia and include video and film in all our courses.
- We are one of the few providers that offer advanced courses relating to the financial markets, modelling and implementation.



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## Agenda

### 1. The stuff you need to know before we start

- Definition of AI & a brief history of artificial intelligence.
- The hardware and software that makes AI possible.
  - GPU, CPU, TPU
  - The Open source revolution
  - Cloud processing of AI
- AI jargon from ANI, AGI to ASI.
- The AI singularity.
- Artificial intelligence vs Machine Learning vs Deep Learning.
- Classification versus Regression.

### 2. Supervised Learning & Unsupervised Learning

- Getting to grips with jargon such as:
  - Data cleaning and one-hot encoding.
  - Over-fitting vs under-fitting.
  - Hyper-parameters.
- Explanation of the different types of supervised and unsupervised methods and how they are used in business. **Some** of the methods discussed include:
  - Linear & Logistic regression.
  - K nearest neighbours.
  - Decision Trees
  - Ensemble Learning.
  - Unsupervised methods such as:
    - Clustering.
    - Dimensionality reduction with Principal component analysis (PCA).

Mark will demonstrate many of the algorithms "live", using python.

### 3. Neural Networks, Deep Learning & Reinforcement Learning

- Getting to grips with neural networks & Deep learning.
- Understanding Parameters
- Layers of abstraction and Nodes.
- Convolutional neural networks.
- Recurrent neural networks.
- Understanding how reinforcement learning works.
- Generative Adversarial Networks (GAN's).

Mark will demonstrate a live financial markets implementation with an ANN & RNN.

### 4. Explainable AI (XAI)

- "Black Box" models versus "White Box" models.
- The dilemma of Black box models for GDPR.
- Finding solutions (with live financial markets demonstration of SHAP).





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## 5. NLP (Natural Language Processing) & why it is so important in the financial Markets!

- Understanding Large Language Models.
- Understanding Tokens.
- Understanding Prompts
- A Look at ChatGPT, Bard, BingChat, Claude, Llama 2 etc.
- Extensions.
- Overview of AutoGPT & Langchain.
- Different NLP models: From Word vectors to "sequence to sequence" to BERT and FinBERT.
- Open Source Alternatives
- HuggingFace

Note: Although Mark will briefly demo the usage of ChatGPT and Others, for a more detailed overview of using the ChatGPT, please check out our "Mastering ChatGPT" short course.

## 6. Implementing AI yourself.

- The environment you need to set up.
- Stages of AI and machine learning implementation.
- Security Concerns.
- Some key open source projects including: Scikit-learn, TensorFlow, Microsoft Azure Learning Studio, Keras, PyTorch, DataRobot, AWS etc.

## 8. Risks, Ethics and implications of AI:

- What are people saying about AI?
- Risks of AI: Where and how can it all go wrong.
- Ethics of AI.
- Is your job safe?
- The implications of AI for:
  - Traditional Business & Financial services firms.
  - Regulators & Governments.

Mark will use many pictures, analogies and live demonstrations to explain all of the above in plain English. Mark will also offer examples of how each of the methods (and variations thereof) are used in practice.