Artificial Intelligence and Machine Learning in Finance

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Outline

• What is artificial intelligence?
• How is it being used in finance?
• Are there financial stability implications?
What is Artificial Intelligence?
It’s not the bad guy from the Terminator movies!
It’s more like this:
Definitions

Big Data

Storage and analysis of large and/or complicated datasets

"Why Gramma, what big data you have!"
Definitions

Artificial intelligence
Theory and development of computer systems able to perform tasks that have traditionally required human intelligence.
Definitions

Machine Learning
A method of designing algorithms that automatically optimize through experience and with limited or no human intervention.
Definitions

Artificial Intelligence

Machine Learning

Big Data Analytics
How is it being used in finance?
Uses of AI

Consumer facing applications

- Chatbots and virtual assistants
- Credit scoring
- Insurance pricing
Uses of AI

Operations focused uses

Capital optimization

Model risk management and validation

Market Impact Analysis

Stress testing
Uses of AI

Trading and Portfolio Management

- Identification of price signals
- Trade execution
- News and research analysis
Uses of AI

Compliance

Monitoring behavior

Data quality assurance

KYC/AML
Uses of AI

*What we say to dogs*

Okay, Ginger! I've had it! You stay out of the garbage! Understand, Ginger? Stay out of the garbage, or else!

*What they hear*

blah blah GINGER blah
blah blah blah GINGER blah
blah blah GINGER blah
blah blah GINGER blah
Uses of AI

What **we** hear traders saying:
- Can you buy me a birthday present?
  - Sure thing!

What **AI** hears traders saying:
- Will you help me manipulate LIBOR today?
  - Sure thing!
Uses of AI

Supervision

Compliance monitoring

Systemic risk identification

Fraud detection
Financial Stability Implications of AI?
Financial Stability Benefits

- Easier regulatory compliance
- Greater efficiency
- Improved systemic risk monitoring
- Improved risk management
- Better fraud detection
- Improved supervisory effectiveness
Financial Stability Risks

Interpretability issues

Data privacy and governance issues

Increased third party dependencies

Human resource deficiencies

Input → BLACK BOX → Output
Final Thoughts

AI is not a product it is a foundation