

FinTech

Lecture 3. Harnessing data with artificial intelligence and machine learning

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Learning outcomes

- ▶ Explain how data can be used in the financial services industry
- ▶ Discuss some of the problems in trying to monetize data for financial services

Overview

1. **Introduction**
2. BIA: Apply behavioral analysis to decision-making
3. Academic reading
4. Conclusion

Introduction I

- ▶ How data processing works?
 - ▶ In this digital age, electronic devices and software applications process trillions of bytes of data every minute of every day
 - ▶ Information processing: transformation of data into **usable** information
 - ▶ This information is used in prediction and decision-making by companies
 - ▶ to gain a competitive edge over their rivals
 - ▶ to solve problems and improve processes
- ▶ FinTech revolution has disrupted:
 - ▶ Ways in which data is gathered and used in financial systems

Introduction II

- ▶ Collective human behavior is stored on the **world wide web**
 - ▶ Applications of information processing in financial services:
 - ▶ e.g. the volume and tone of messages posted on social media platforms such as Facebook and Twitter have been shown to have some value in informing trading strategies and investment decisions
 - ▶ e.g. statements released by publicly traded companies can also be a source of insight into the financial health of those firms, and can help investors decide whether or not to invest in these companies
- ▶ Data helps investors make better decisions and secure higher returns
 - ▶ Methods and tools to create new trading and investment strategies
 - ▶ Challenges associated with attempting to monetize data
- ▶ **Information** → Investment strategies → Positive alpha

Overview

1. Introduction
2. **BIA: Apply behavioral analysis to decision-making**
3. Academic reading
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- ▶ Business Intelligence Advisors, founded in 2001 [[link](#)]
 - ▶ Create a tool based on techniques originally developed by the CIA
 - ▶ Detect deception in high-stakes communication settings
 - ▶ Better inform future investment decisions
 - ▶ TBA (Tactical Behavior Assessment): Interpret information communicated in earnings calls, TV interviews, and other corporate disclosures
 - ▶ Analysis of verbal and nonverbal cues, which can indicate the level of honesty and risk in unscripted statements
 - ▶ These behavioral cues in corporate communications serve as a valuable source of insight into the future of particular firms

▶ Video

- ▶ How data can be used to make intelligent business and investment
 - ▶ The evolution of and the outlook for BIA
 - ▶ BIA's TBA methodology in action
- ▶ Assist investors to make informed decisions
 - ▶ The potential advantages offered by useful and predictive data analysis are highly sought after in the financial services industry

Overview

1. Introduction
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3. **Academic reading**
4. Conclusion

Academic reading

- ▶ Can Twitter Help Predict Firm-level Earnings and Stock Returns?
 - ▶ TAR 2018
- ▶ Measuring Corporate Culture Using Machine Learning
 - ▶ RFS 2021
- ▶ How to Talk When a Machine Is Listening: Corporate Disclosure in the Age of AI
 - ▶ RFS 2023
- ▶ The Listenability of Disclosures and Firms' Information Environment
 - ▶ TAR R&R
- ▶ Financial Statement Analysis with Large Language Models
 - ▶ Working paper

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AI, ML, and the boundaries of FinTech

- ▶ Process and decode information that could be used to assist their clients' decision-making
- ▶ How data can be applied to guide trading strategies and improve ROI?
 - ▶ How can gathering data be useful for investment management?
 - ▶ How can computational systems be applied to financial services? What are the benefits of applying them in this sector? Are there any limitations to their application?
 - ▶ What business model is most scalable for a startup company that aims to specialize in data extraction or processing in the financial services space?
- ▶ Risks of using artificial intelligence and machine learning in finance