

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. Recorded Future: Secure our world with intelligence
3. BIA: Apply behavioral analysis to decision-making
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
- ▶ Interactive Infographic [[link](#)]
 - ▶ Visual representation of data processing

Introduction II

- ▶ FinTech revolution has disrupted:
 - ▶ Ways in which data is gathered and used in financial systems
- ▶ 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
- ▶ This module explores ways in which web-based data can be harnessed to help 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

Data and the search for alpha

- ▶ **Information** → Investment strategies → Positive alpha
- ▶ Recorded Future and BIA (Business Intelligence Advisors)
 - ▶ Both firms have ties to the CIA (Central Intelligence Agency)
 - ▶ Employ methods and tools originally developed for national security
 - ▶ They offer a range of products and services that help investors leverage information on different stocks and companies in financial markets

Overview

1. Introduction
2. **Recorded Future: Secure our world with intelligence**
3. BIA: Apply behavioral analysis to decision-making
4. Conclusion

Recorded Future I

- ▶ Founded in 2009 as a predictive analytic software company [[link](#)]
- ▶ Business model: Extract and aggregate information from multiple internet resources and make predictions about future events

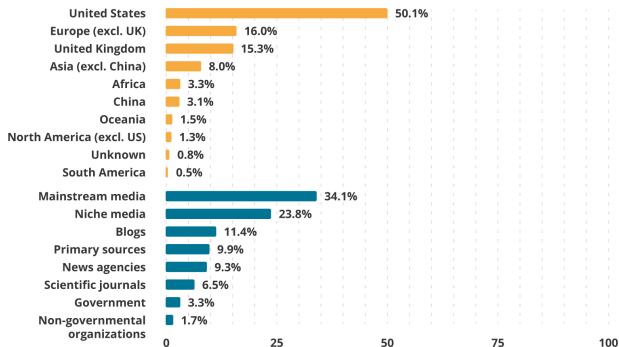


Fig. Data sources used by Recorded Future

Recorded Future II

▶ Video 3-1

- ▶ How Recorded Future uses data to create new trading strategies
 - ▶ How Recorded Future established itself in the defense industry through its ability to predict terrorist attacks using data from the internet
 - ▶ How it branched out into the finance industry by using the same approach and technology to create new trading strategies
- ▶ Challenges associated with commoditizing data for financial services

Overview

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

- ▶ 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 3-2

- ▶ 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. BIA: Apply behavioral analysis to decision-making
4. **Conclusion**

AI, ML, and the boundaries of FinTech

- ▶ Recorded Future and BIA use AI and ML to 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?

Takeaway

▶ Video 3-3

- ▶ Risks and ramifications of applying machine learning to financial services
- ▶ Potential of improved quantitative techniques for creating new strategies
 - ▶ How collecting large amounts of data on peoples' financial behavior can help make predictions about their decisions in the future
- ▶ Drawbacks of using artificial intelligence and machine learning in finance