AWS Educate 高中生雲端推廣線上講座

雲端、金融與數據科學：跨領域學習
(Cloud, Finance, and Data Science: Interdisciplinary Learning)

Time: 2021/8/12 (Thu) 18:30 - 20:30 pm (18:40-19:10 pm)
Host: AWS Educate Ambassador in Taiwan

https://app.sli.do/event/0wq99hvv/

戴敏育 副教授

Min-Yuh Day, Ph.D, Associate Professor

國立臺北大學 資訊管理研究所

Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

2021-08-12

NTPU
國立臺北大學
National Taipei University

戴敏育 博士
(Min-Yuh Day, Ph.D.)

aws academy
Accredited Educator

aws certified
Solutions Architect
Associate

aws certified
Cloud Practitioner

aws educate | Cloud Ambassador
2020 Cohort

國立臺北大學 資訊管理研究所 副教授
中央研究院 資訊科學研究所 訪問學人
國立臺灣大學 資訊管理 博士

Publications Co-Chairs, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013-)

Program Co-Chair, IEEE International Workshop on Empirical Methods for Recognizing Inference in TExt (IEEE EM-RITE 2012-)

Publications Chair, The IEEE International Conference on Information Reuse and Integration (IEEE IRI)

NTPU
國立臺北大學
National Taipei University

中央研究院 ACADEMIA SINICA 1928

Agenda

- **NTPU AWS 雲創學院跨領域學習**
- **雲端、金融與數據科學**
- **金融資料科學跨領域學習歷程**

https://app.sli.do/event/0wq99hvv/

國立臺北大學 AWS 雲創學院

- **Amazon Web Services (AWS)**
  - 全球廣泛採納的雲端平台，透過全球資料中心提供超過175項功能完整的服務，包含資料庫、運算分析、網路、開發人員工具、資訊安全和企業應用等，不但能在AWS上運行 R, Python, C++ 等程式語言，也可延伸至AI與機器學習、區塊鏈、物聯網、資料湖 (Data Lake)、大數據分析、遊戲開發及電子商務等多樣化的應用情境中。
- 國立臺北大學推動AWS雲創學院發展
  - 期望鼓勵全校各院系相關課程教師，
    於教學中導入雲端概念與AWS應用，透過帶領學生實作練習，
    增進學生學習成效以及和產業接軌的機會。

NTPU

國立臺北大學

National Taipei University

aws educate

+

aws academy

AWS雲端應用導入教學

- **企業雲端運算入門 (Foundation of Business Cloud Computing)**
  - (BA4, NTPU) (Spring 2021)
- **大數據分析 (Big Data Analytics)**
  - (MBA, IM, NTPU) (Fall 2020)
- **軟體工程 (Software Engineering)**
  - (MBA, IM, NTPU) (Fall 2020)
- **雲端服務架構實務 (Cloud Services Architecting Practices)**
  - (MI4, TKU) (Spring 2021, Fall 2020, Spring 2020, Fall 2019)

https://web.ntpu.edu.tw/~myday/teaching.htm

課程理論中融入AWS概念

- 智慧金融量化分析 (Artificial Intelligence in Finance and Quantitative)
  - 國立台北大學資管所碩士班 (Fall 2021)
- 人工智慧文本分析 (Artificial Intelligence for Text Analytics)
  - 國立台北大學資管所碩士班 (Spring 2022)
- 人工智慧 (Artificial Intelligence)
  - 國立台北大學資管所碩士班 (Spring 2021)
- 資料探勘 (Data Mining)
  - 國立台北大學資管所碩士班 (Spring 2021)
    (電子商務碩士學分學程)

https://web.ntpu.edu.tw/~myday/teaching.htm

企業雲端運算入門
(Foundation of Business Cloud Computing)
雲端概念概述
(Cloud Concepts Overview)

企業雲端運算入門 (Foundation of Business Cloud Computing) (BA4, NTPU) (Spring 2021)
(AWS Academy Cloud Foundations; ACF) (AWS Certified Cloud Practitioner)
(BA4, NTPU) (3 Credits, Elective) (U4010) (自主學習課程)(商業智慧與大數據分析學士學分學程)
(1092) (國立台北大學企管系4A, 4B) (選修3學分) (授課教師：謝榮桂，戴敏育) (2021.02 - 2021.06)
(週三 Wed, 6, 7, 8, 14:10-17:00) (台北大學三峽校區 文3F10_L)

謝榮桂 (Jung-Kuei Hsieh), 戴敏育 (Min-Yuh Day)

National Taipei University

國立臺北大學

2021-02-24

AWS Certification

Professional

Two years of comprehensive experience designing, operating, and troubleshooting solutions using the AWS Cloud

- aws certified Solutions Architect Professional
- aws certified DevOps Engineer Professional

2

Associate

One year of experience solving problems and implementing solutions using the AWS Cloud

SAA

- aws certified Solutions Architect Associate — **Architect**
- aws certified SysOps Administrator Associate — **Operations**
- aws certified Developer Associate — **Developer**

1

Foundational

Six months of fundamental AWS Cloud and industry knowledge

CLF

- **Cloud Practitioner**
- aws certified Cloud Practitioner

Specialty

Technical AWS Cloud experience in the Specialty domain as specified in the **exam guide**

- aws certified Advanced Networking Specialty
- aws certified Security Specialty
- aws certified Machine Learning Specialty
- aws certified Alexa Skill Builder Specialty
- aws certified Data Analytics Specialty
- aws certified Database Specialty

https://aws.amazon.com/certification/

AWS Certified Cloud Practitioner (CLF-C01)

1

Source: https://aws.amazon.com/certification/certified-cloud-practitioner/

AWS Certified Solutions Architect – Associate (SAA-C02)

2

Source: https://aws.amazon.com/certification/certified-solutions-architect-associate

Agenda

- NTPU AWS 雲創學院跨領域學習
- 雲端、金融與數據科學
- 金融資料科學跨領域學習歷程

https://app.sli.do/event/0wq99hvv/

FinTech ABCD

AI

Block Chain

Cloud Computing

Big **D**ata

FinTech

Financial Technology
FinTech

"providing
financial services
by making use of
software and
modern technology"

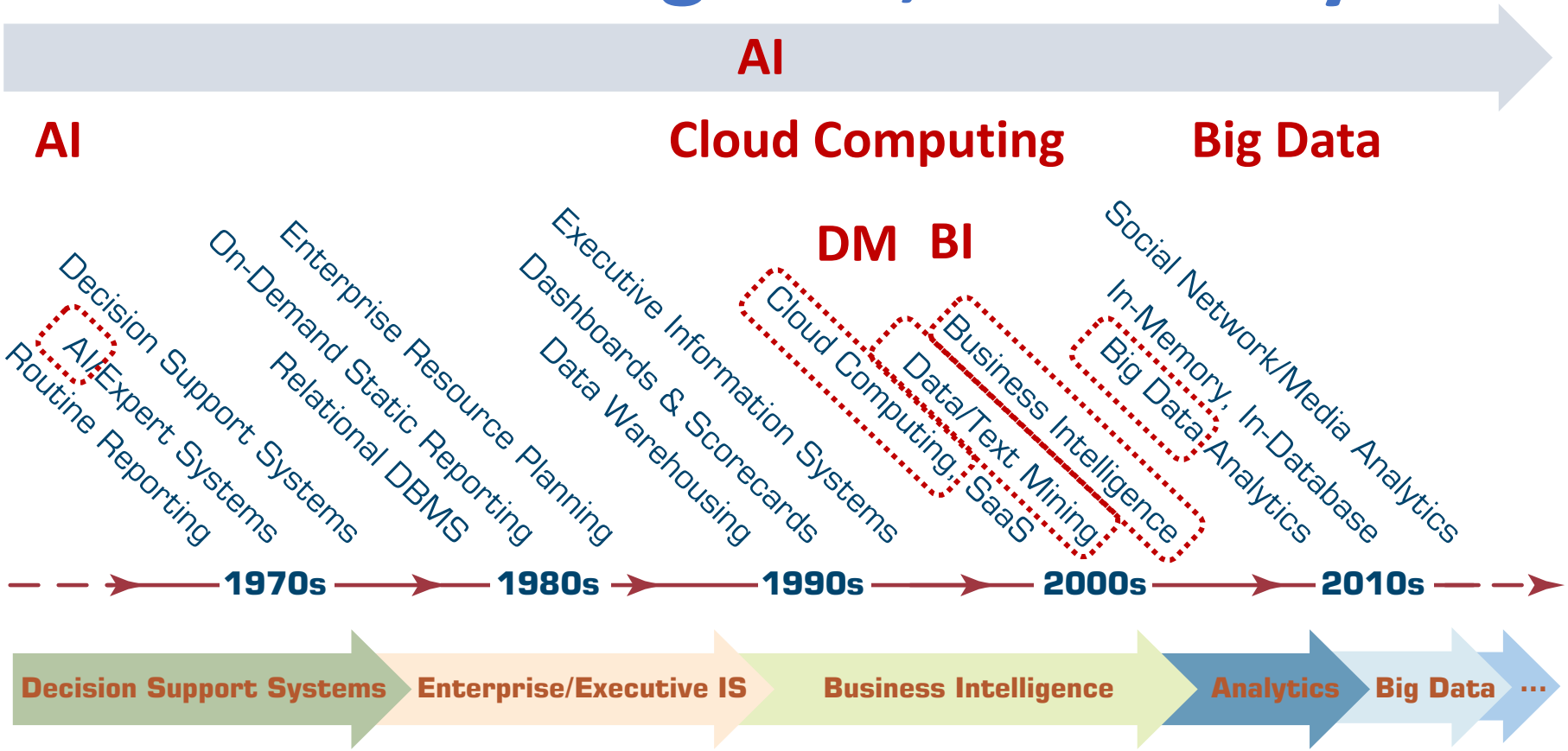
Source: https://www.fintechweekly.com/fintech-definition

Financial Services

Financial Services

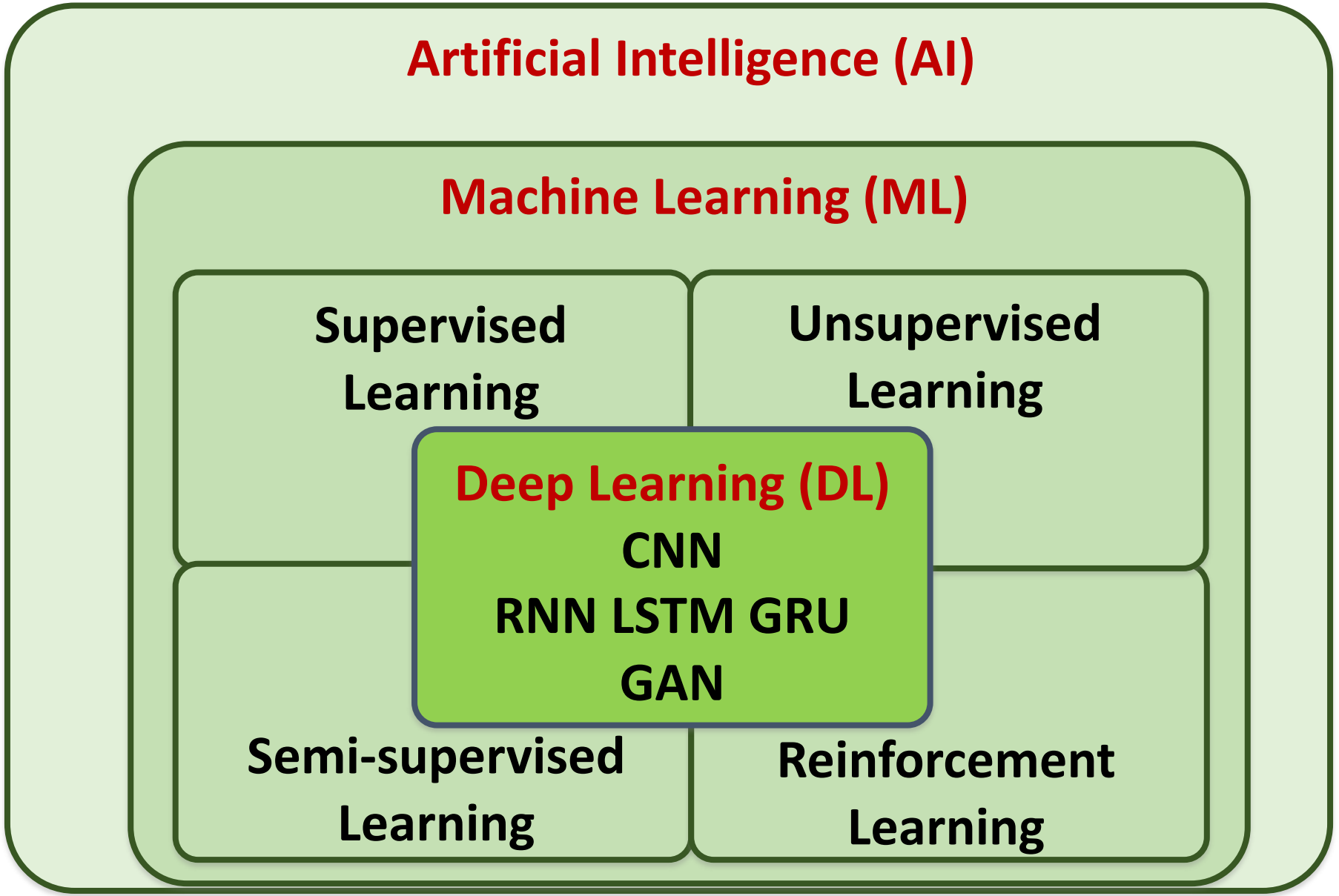
Source: http://www.crackitt.com/7-reasons-why-your-fintech-startup-needs-visual-marketing/

AI, Big Data, Cloud Computing
Evolution of Decision Support, Business Intelligence, and Analytics



Source: Ramesh Sharda, Dursun Delen, and Efraim Turban (2017),
Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition, Pearson

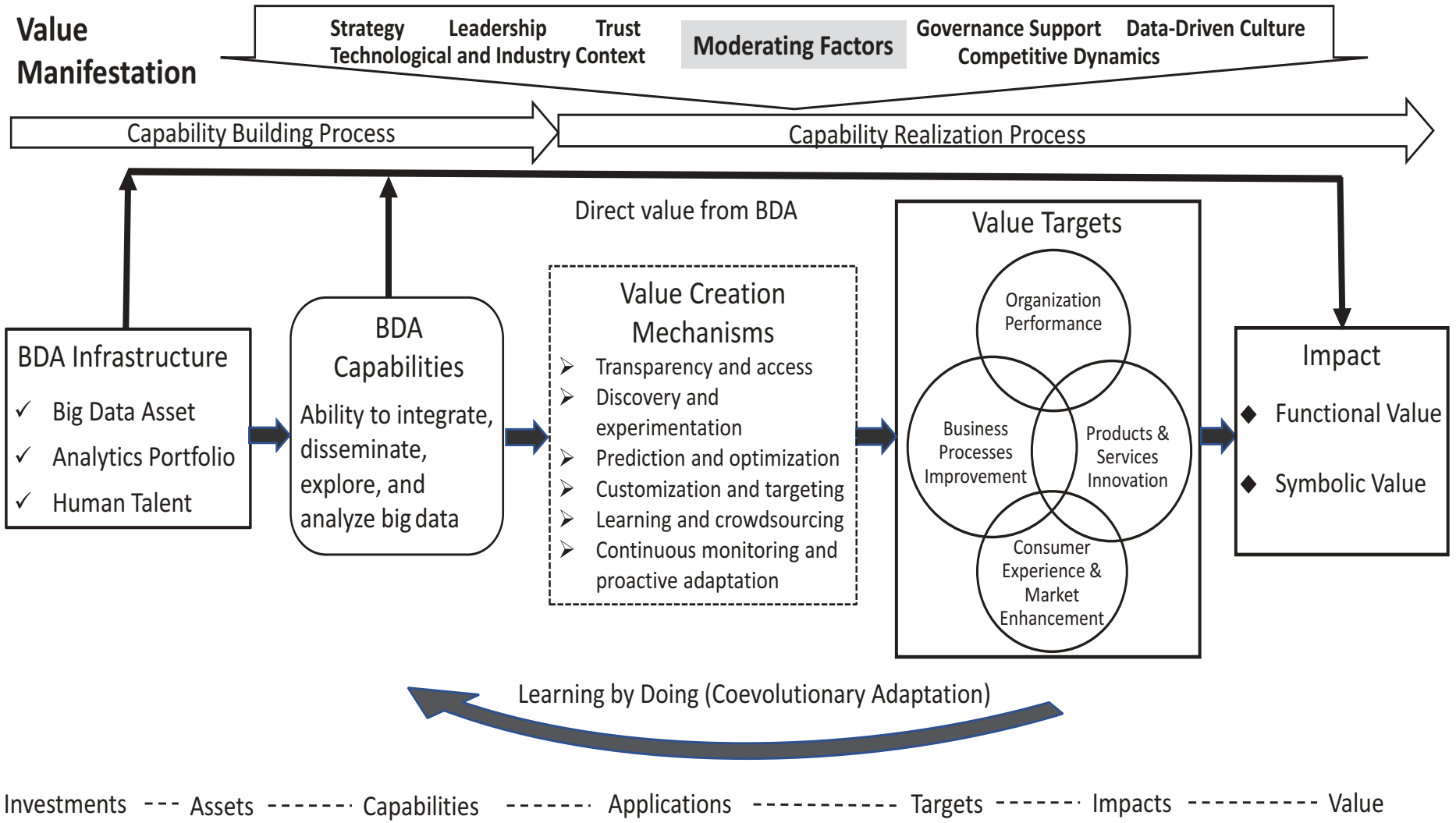
AI, ML, DL



Source: https://leonardoaraujosantos.gitbooks.io/artificial-inteligence/content/deep_learning.html

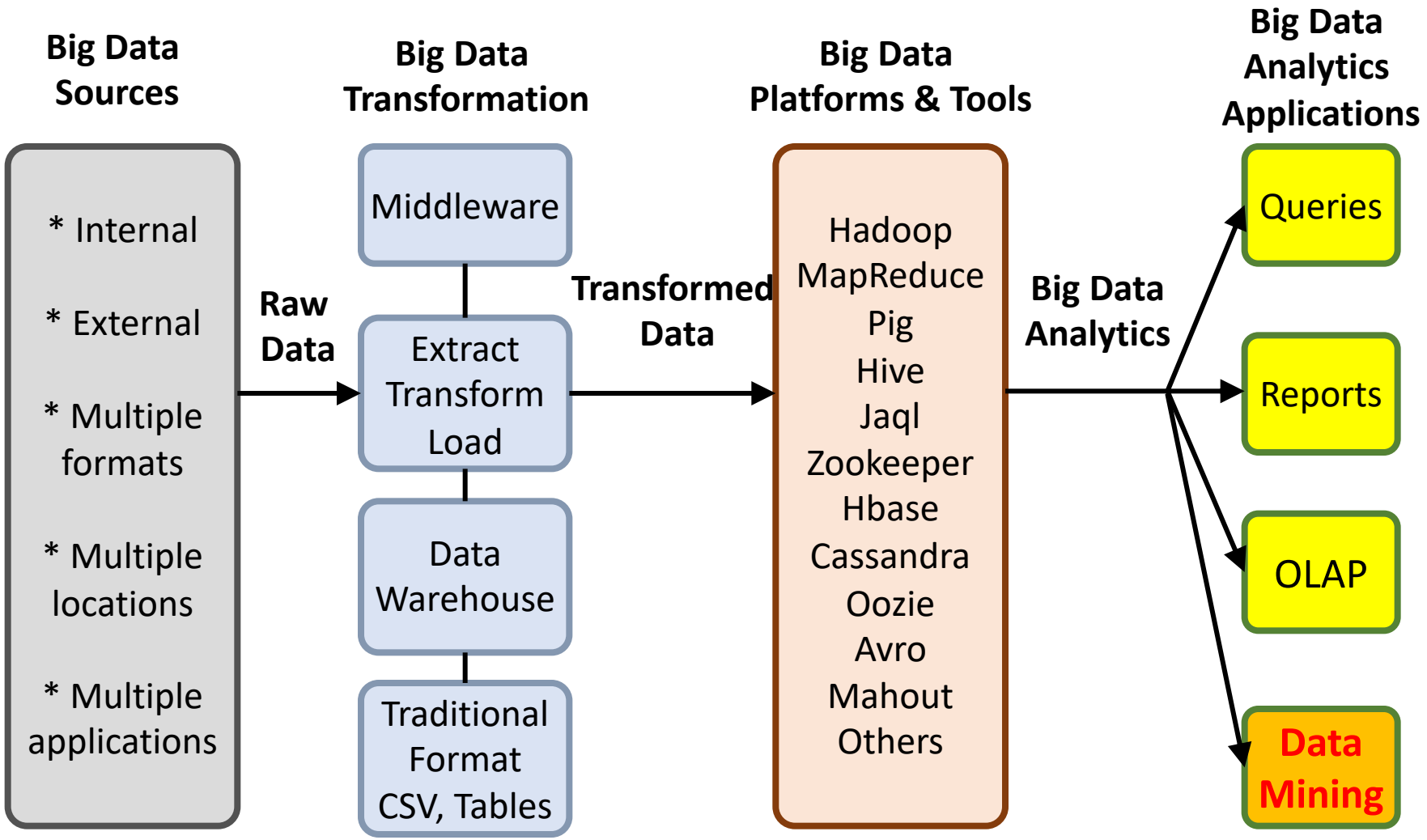
Value Creation by Big Data Analytics

(Grover et al., 2018)



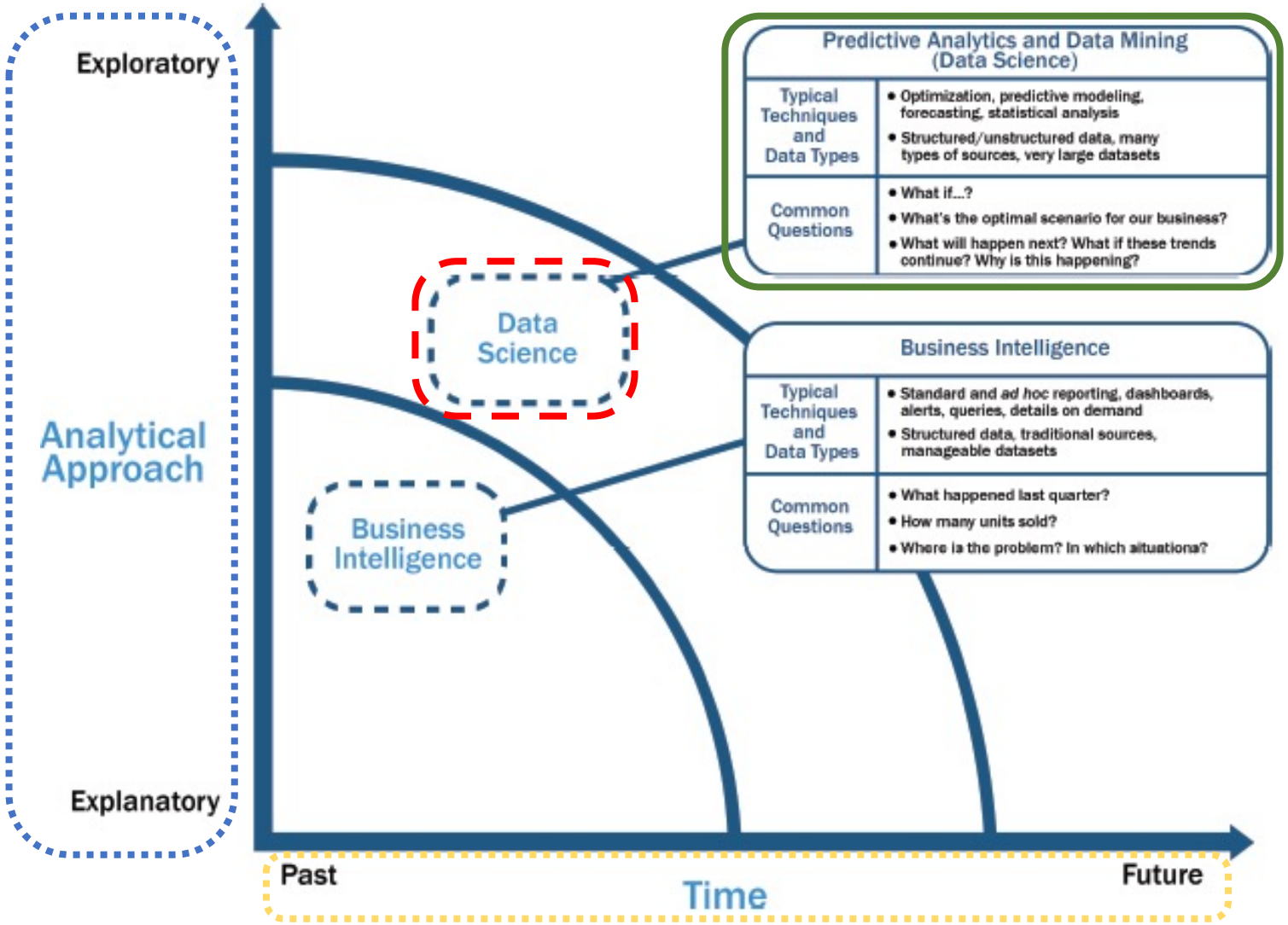
Source: Varun Grover, Roger HL Chiang, Ting-Peng Liang, and Dongsong Zhang (2018), "Creating Strategic Business Value from Big Data Analytics: A Research Framework", Journal of Management Information Systems, 35, no. 2, pp. 388-423.

Architecture of Big Data Analytics



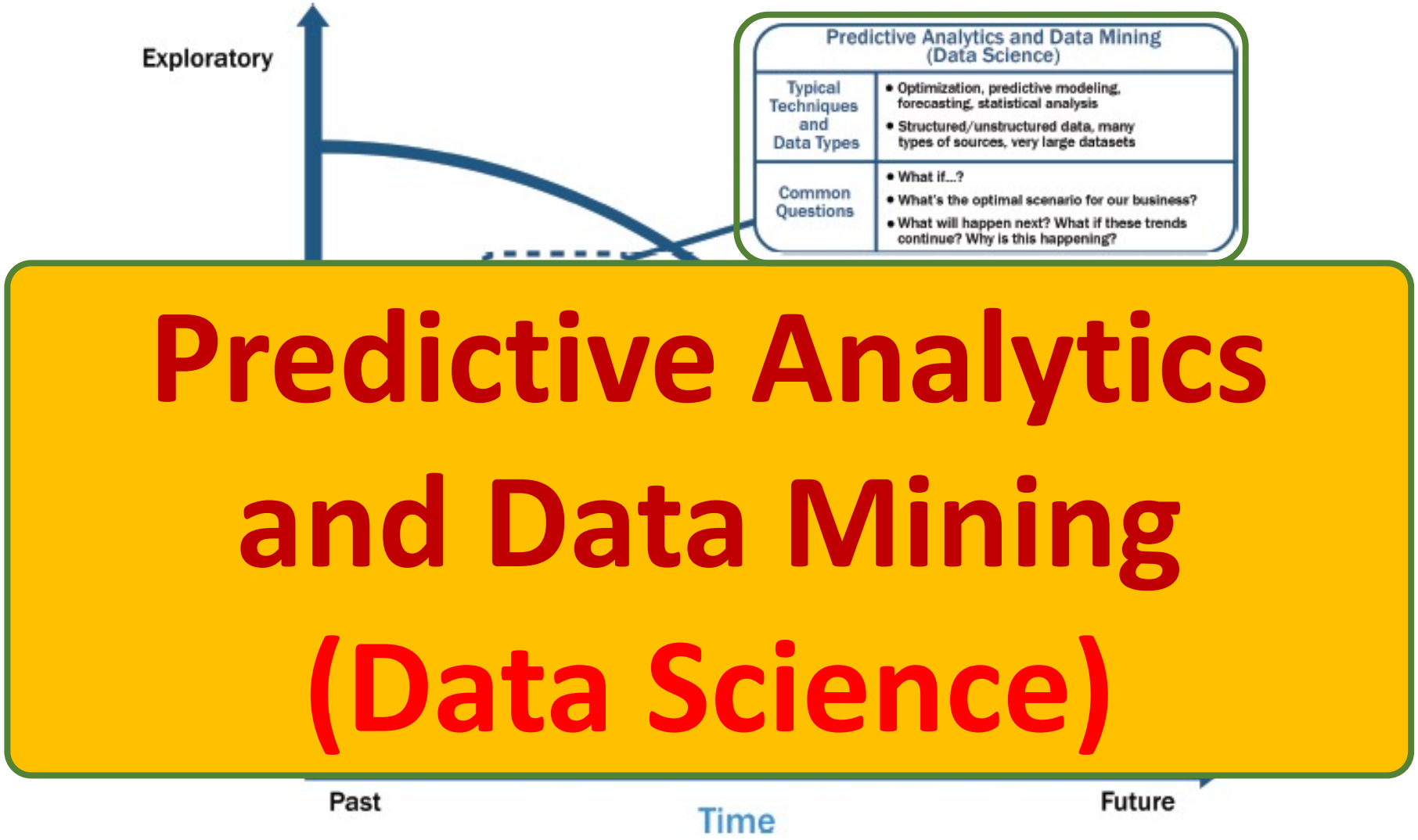
Source: Stephan Kudyba (2014), Big Data, Mining, and Analytics: Components of Strategic Decision Making, Auerbach Publications

Data Science and Business Intelligence



Source: EMC Education Services, Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, Wiley, 2015

Data Science and Business Intelligence



Source: EMC Education Services, Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, Wiley, 2015

Predictive Analytics and Data Mining (Data Science)

Structured/unstructured data, many types of sources, very large datasets

Optimization, predictive modeling, forecasting statistical analysis

What if…?
What's the optimal scenario for our business?
What will happen next?
What if these trends countinue?
Why is this happening?

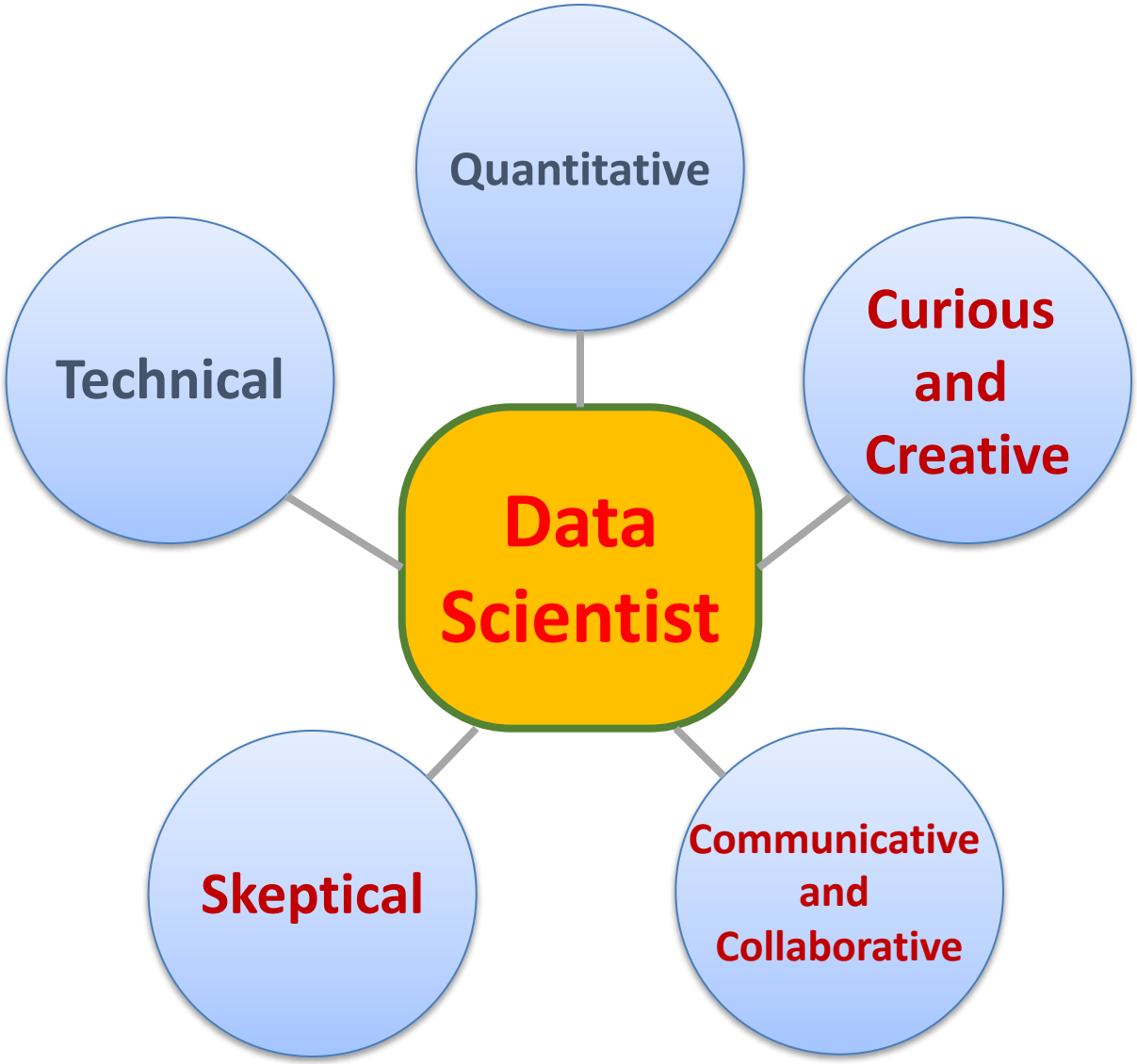
Source: EMC Education Services, Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, Wiley, 2015

Profile of a Data Scientist

- **Quantitative**
  - mathematics or statistics
- **Technical**
  - software engineering,
    machine learning,
    and programming skills
- **Skeptical mind-set** and **critical thinking**
- **Curious** and **creative**
- **Communicative** and **collaborative**

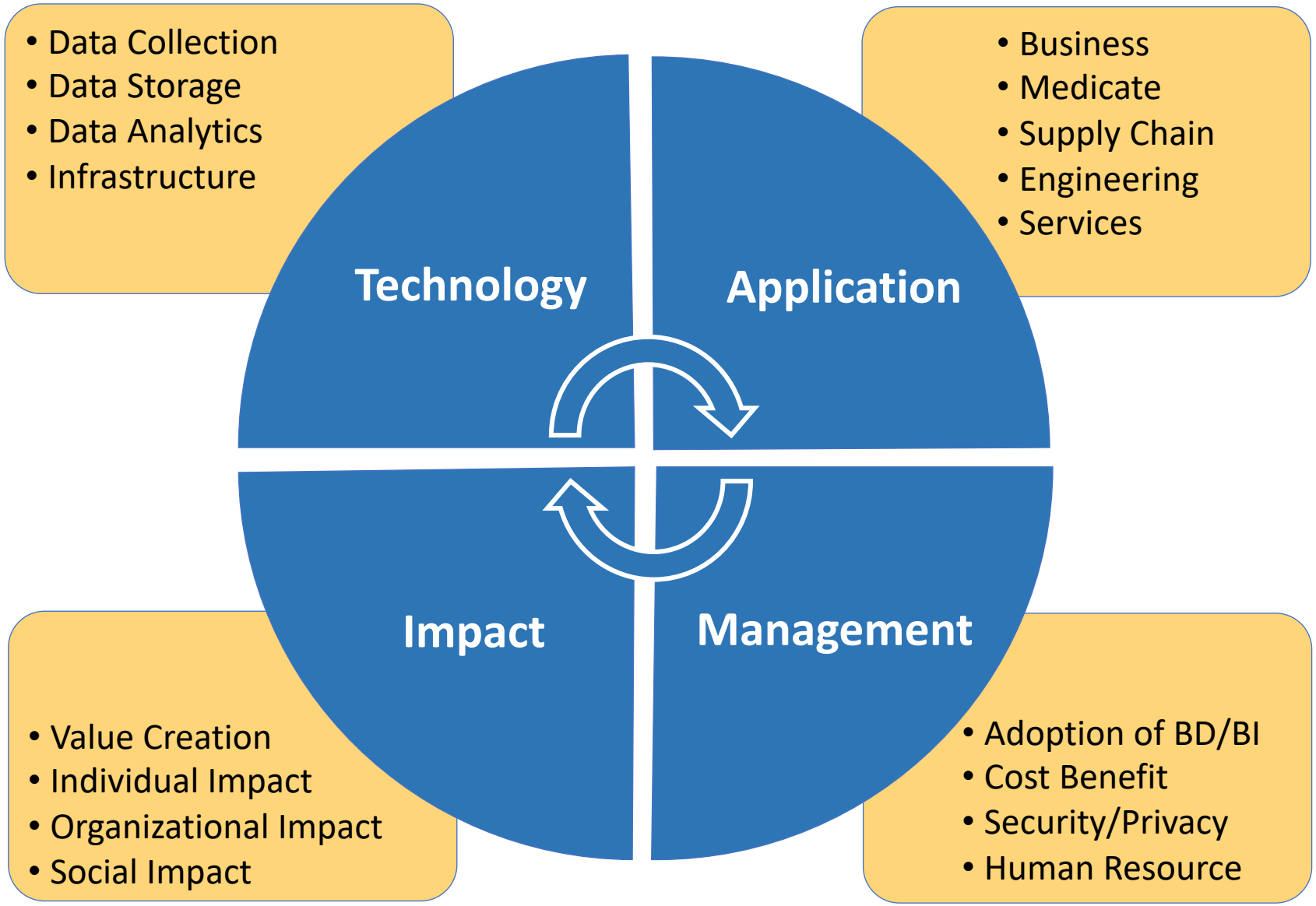
Source: EMC Education Services, Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, Wiley, 2015

Data Scientist Profile



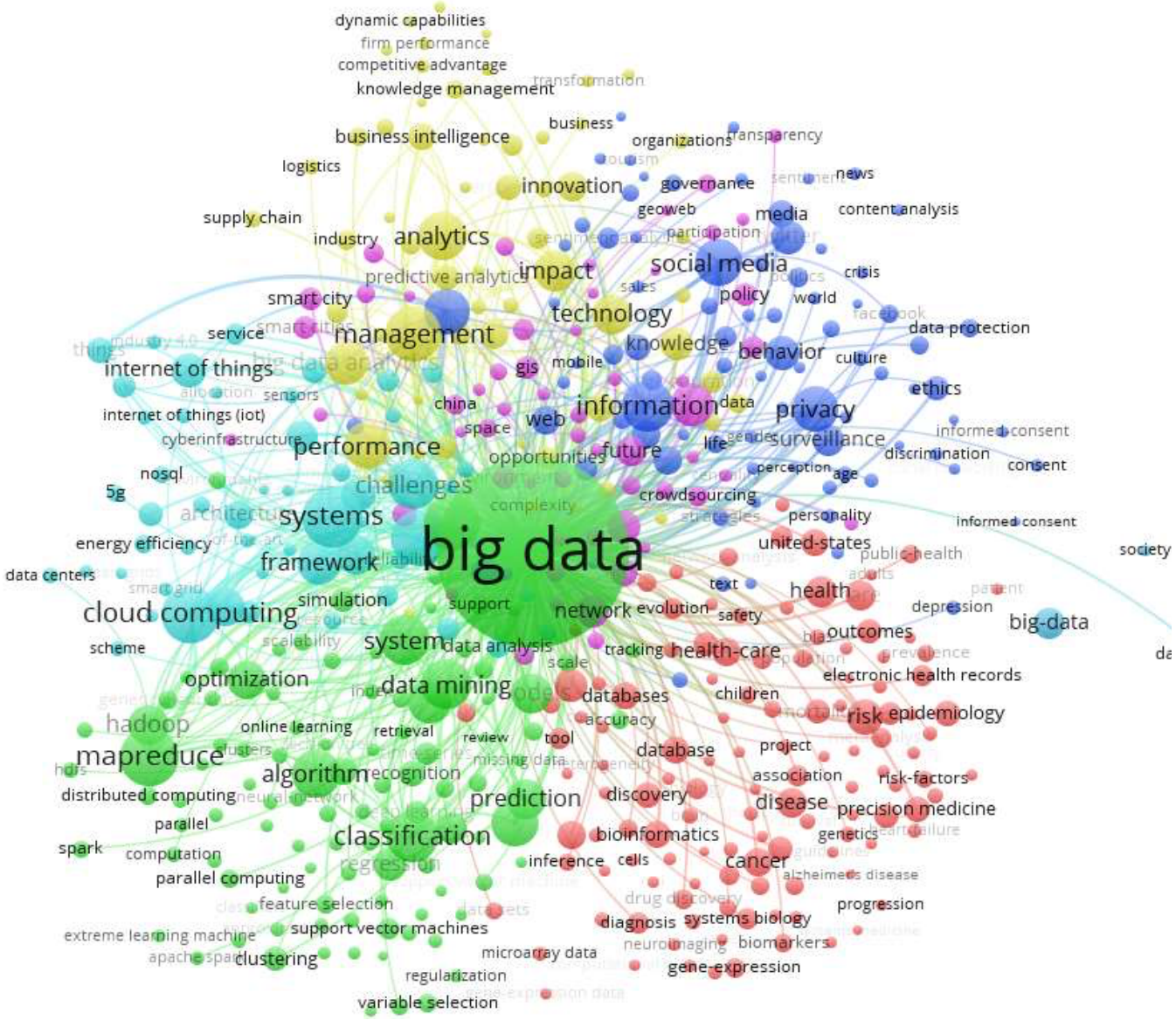
Source: EMC Education Services, Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, Wiley, 2015

Framework for BD and BI Research



Source: Ting-Peng Liang and Yu-Hsi Liu (2018), "Research Landscape of Business Intelligence and Big Data analytics: A bibliometrics study", Expert Systems with Applications, Volume 111, 30, 2018, pp. 2-10

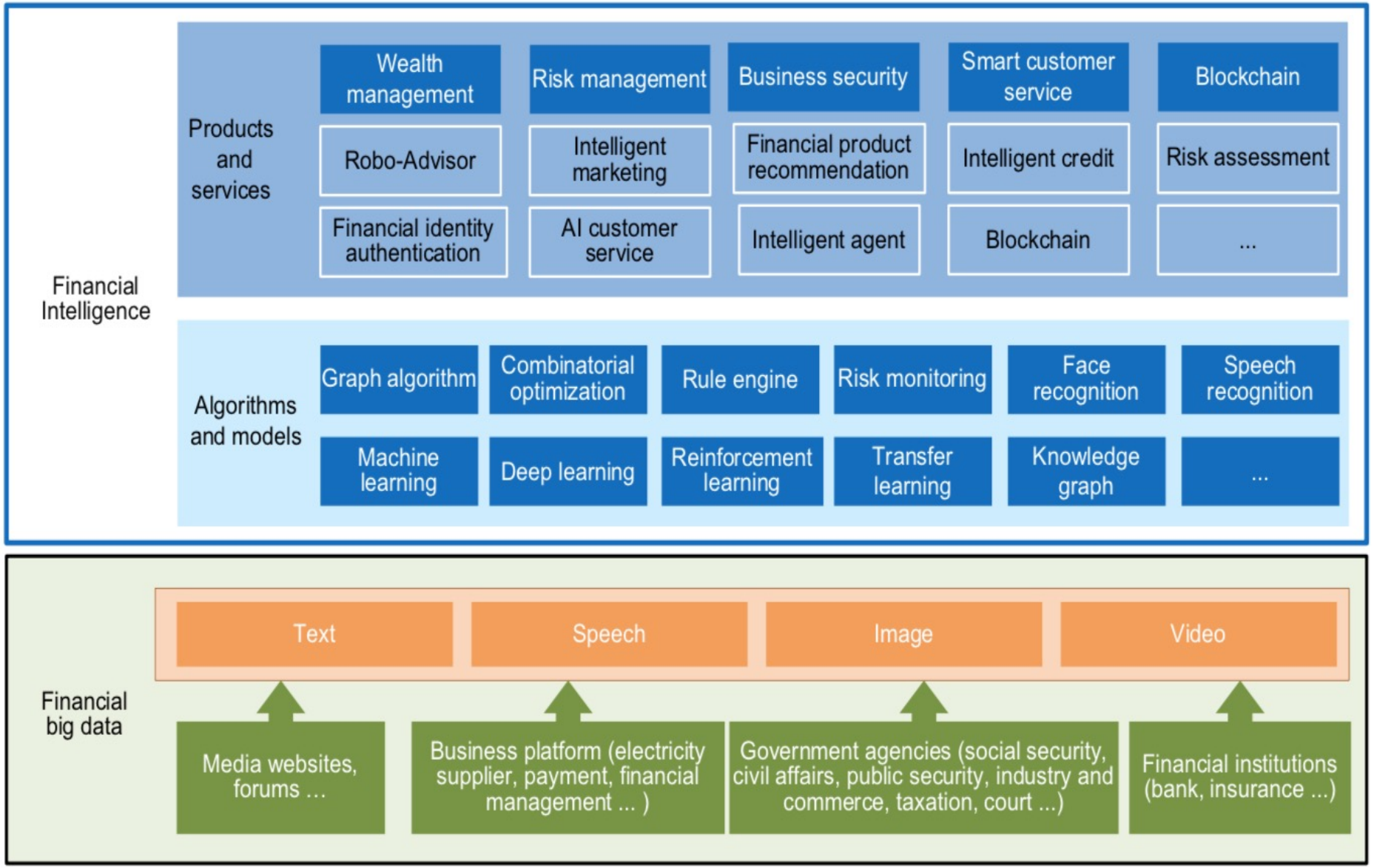
Business Intelligence and Big Data analytics



Source: Ting-Peng Liang and Yu-Hsi Liu (2018), "Research Landscape of Business Intelligence and Big Data analytics: A bibliometrics study", Expert Systems with Applications, Volume 111, 30, 2018, pp. 2-10

FinBrain: when Finance meets AI 2.0

(Zheng et al., 2019)



Source: Xiao-lin Zheng, Meng-ying Zhu, Qi-bing Li, Chao-chao Chen, and Yan-chao Tan (2019), "Finbrain: When finance meets AI 2.0." Frontiers of Information Technology & Electronic Engineering 20, no. 7, pp. 914-924

Technology-driven Financial Industry Development

Development stage	Driving technology	Main landscape	Inclusive finance	Relationship between technology and finance
Fintech 1.0 (financial IT)	Computer	Credit card, ATM, and CRMS	Low	Technology as a tool
Fintech 2.0 (Internet finance)	Mobile Internet	Marketplace lending, third-party payment, crowdfunding, and Internet insurance	Medium	Technology-driven change
Fintech 3.0 (financial intelligence)	AI, Big Data, Cloud Computing, Blockchain	Intelligent finance	High	Deep fusion

Source: Xiao-lin Zheng, Meng-ying Zhu, Qi-bing Li, Chao-chao Chen, and Yan-chao Tan (2019), "Finbrain: When finance meets AI 2.0." Frontiers of Information Technology & Electronic Engineering 20, no. 7, pp. 914-924

FinTech: Financial Services Innovation

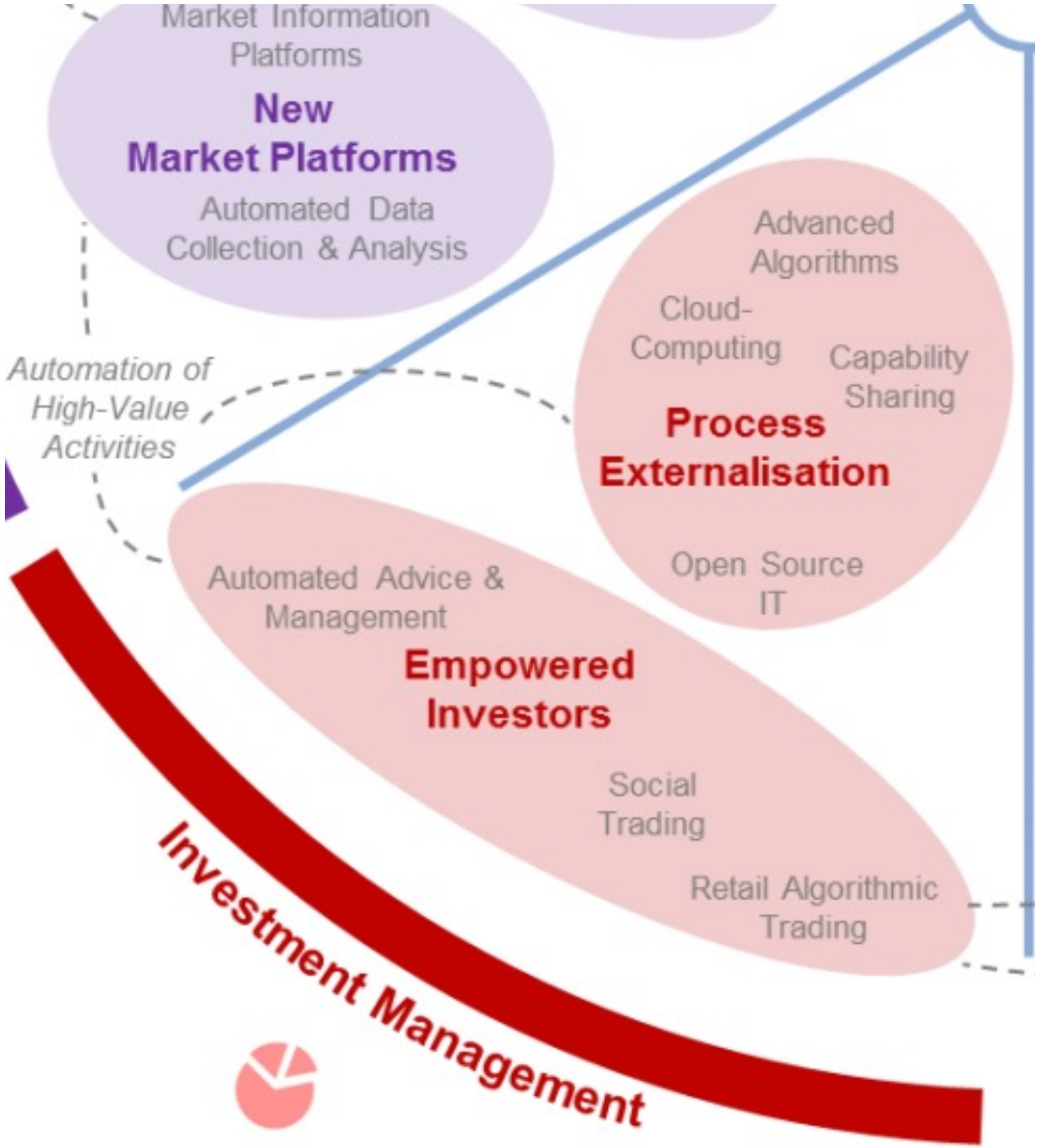
Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

FinTech:
Financial Services Innovation

1. Payments
2. Insurance
3. Deposits & Lending
4. Capital Raising
5. Investment Management
6. Market Provisioning

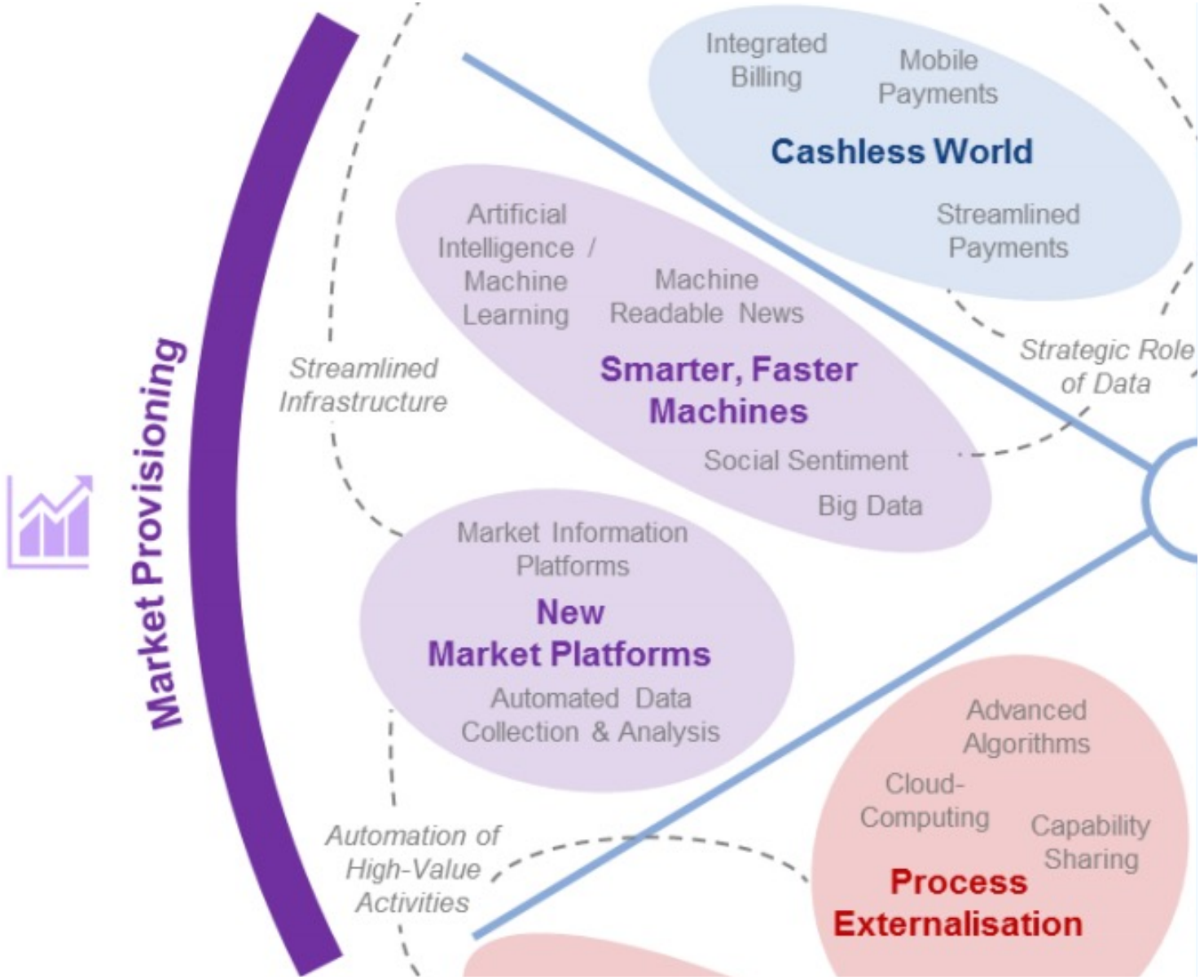
Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

5 FinTech: Investment Management



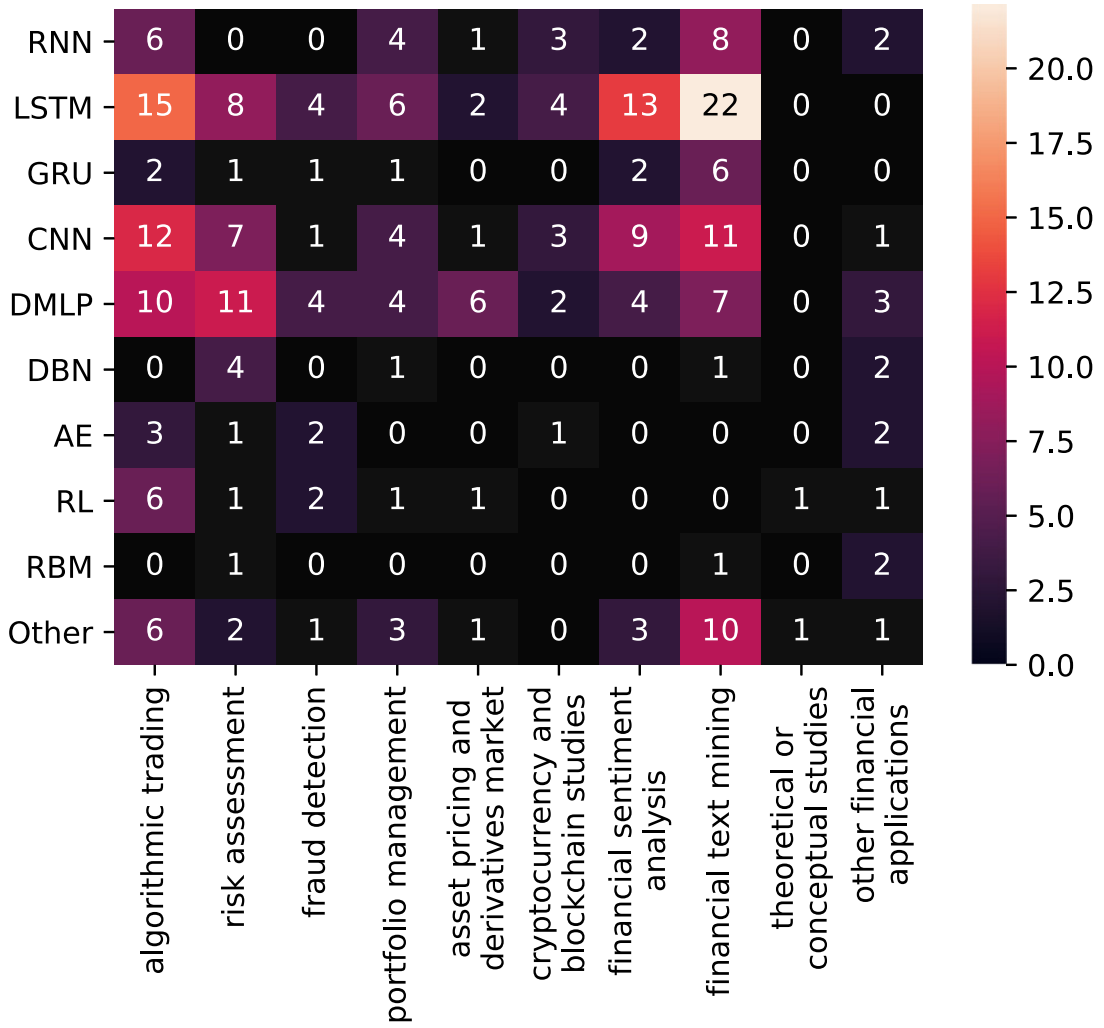
Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

6 FinTech: Market Provisioning



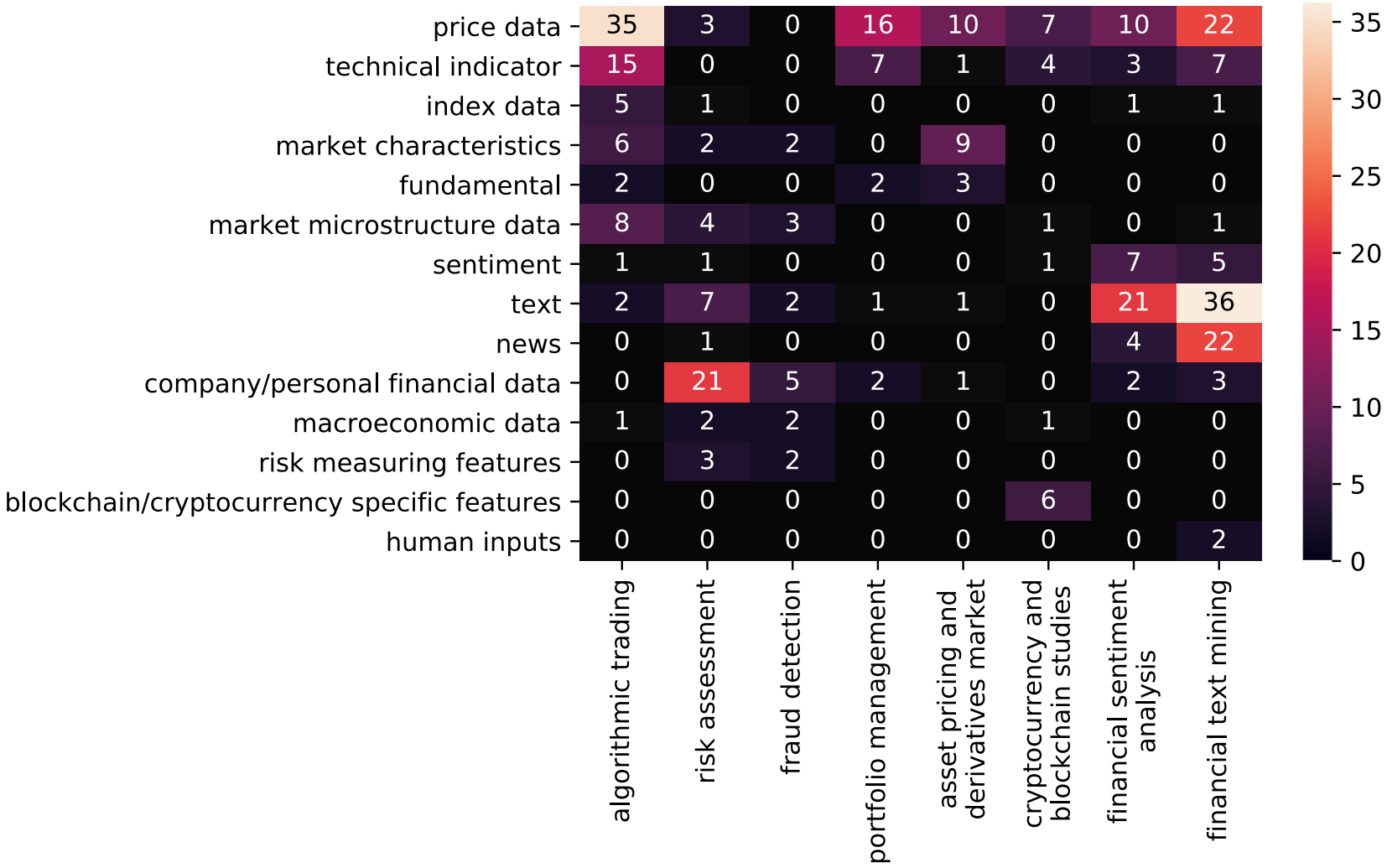
Source: http://www3.weforum.org/docs/WEF_The_future__of_financial_services.pdf

Deep learning for financial applications: Topic-Model Heatmap



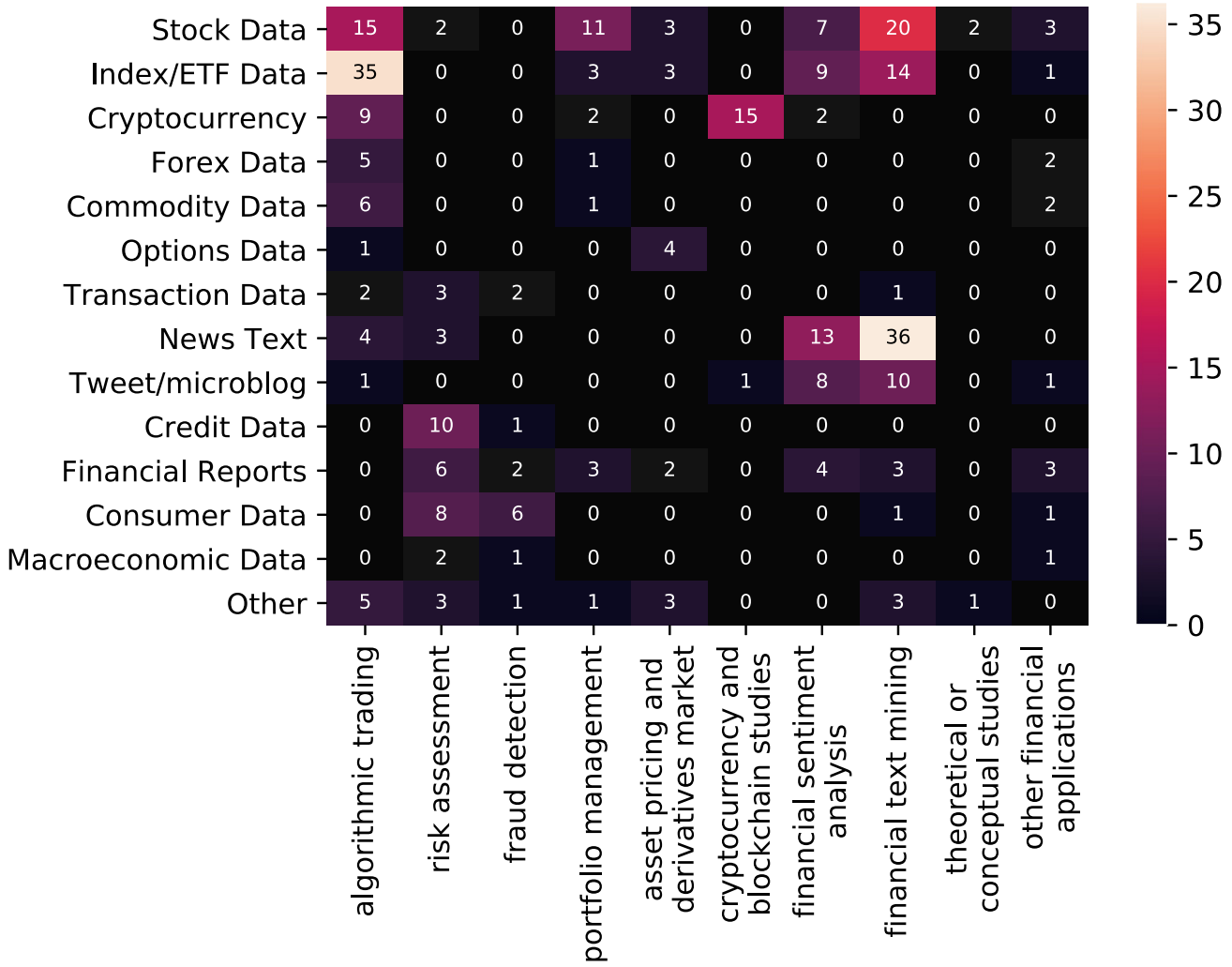
Source: Ahmet Murat Ozbayoglu, Mehmet Ugur Gudelek, and Omer Berat Sezer (2020). "Deep learning for financial applications: A survey." Applied Soft Computing (2020): 106384.

Deep learning for financial applications: Topic-Feature Heatmap



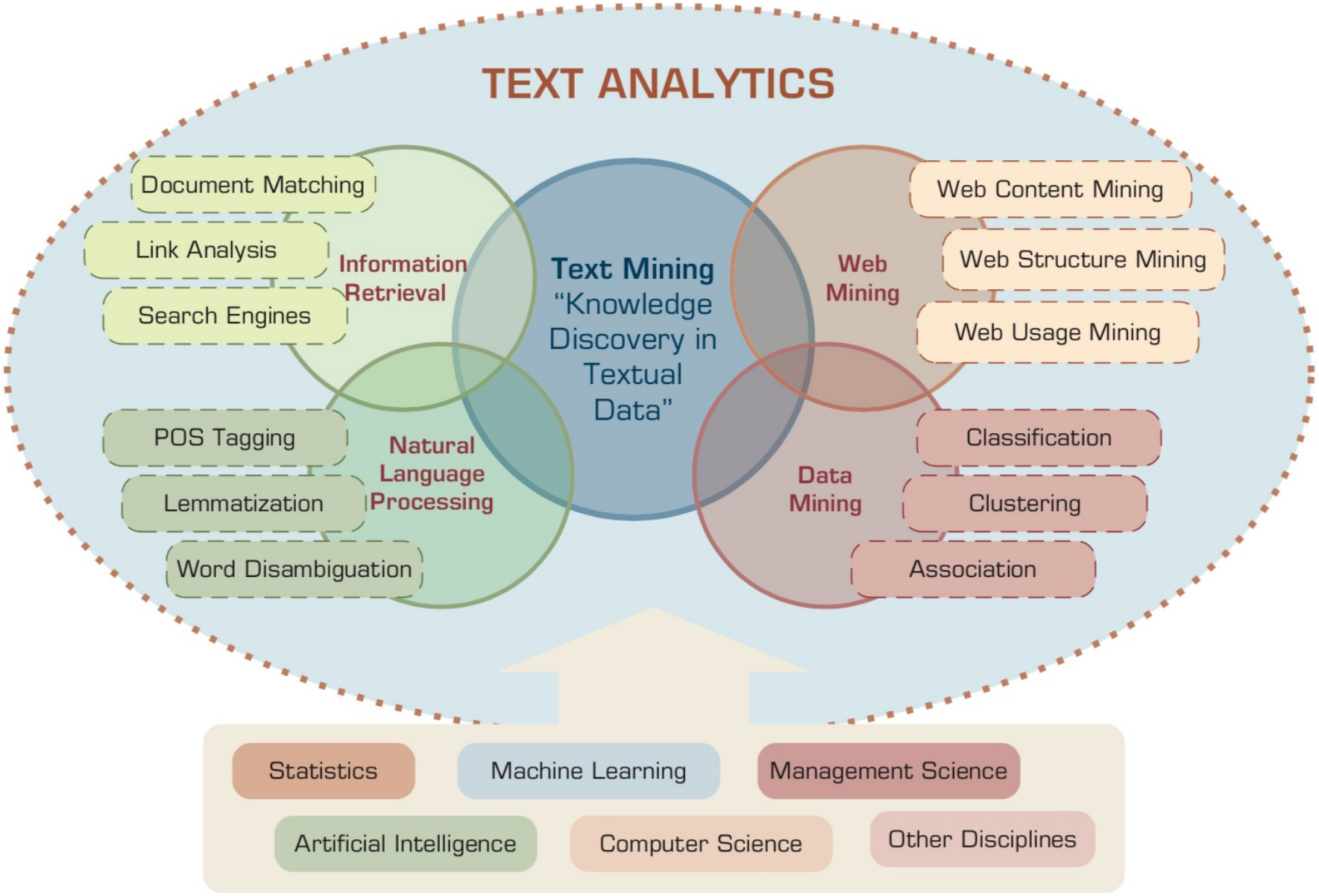
Source: Ahmet Murat Ozbayoglu, Mehmet Ugur Gudelek, and Omer Berat Sezer (2020). "Deep learning for financial applications: A survey." Applied Soft Computing (2020): 106384.

Deep learning for financial applications: Topic-Dataset Heatmap



Source: Ahmet Murat Ozbayoglu, Mehmet Ugur Gudelek, and Omer Berat Sezer (2020). "Deep learning for financial applications: A survey." Applied Soft Computing (2020): 106384.

Text Analytics and Text Mining



Source: Ramesh Sharda, Dursun Delen, and Efraim Turban (2017), Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition, Pearson

Agenda

- NTPU AWS 雲創學院跨領域學習
- 雲端、金融與數據科學
- 金融資料科學跨領域學習歷程

https://app.sli.do/event/0wq99hvv/

金融資料科學跨領域學習歷程

- 對想踏入金融資料科學有興趣的高中生準備建議
  - 學習資源
    - AWS Educate
  - 活動參與
    - AWS Educate Ambassador in Taiwan
  - 學習歷程

https://app.sli.do/event/0wq99hvv/

Summary

- NTPU AWS 雲創學院跨領域學習
- 雲端、金融與數據科學
- 金融資料科學跨領域學習歷程

https://app.sli.do/event/0wq99hvv/

AWS Educate 高中生雲端推廣線上講座

Q & A

雲端、金融與數據科學：跨領域學習
(Cloud, Finance, and Data Science: Interdisciplinary Learning)

Time: 2021/8/12 (Thu) 18:30 - 20:30 pm (18:40-19:10 pm)
Host: AWS Educate Ambassador in Taiwan

https://app.sli.do/event/0wq99hvv/

戴敏育 副教授

Min-Yuh Day, Ph.D, Associate Professor

國立臺北大學 資訊管理研究所

Institute of Information Management, National Taipei University

https://web.ntpu.edu.tw/~myday

2021-08-12