Tamkang University







Practices of Business Intelligence





(Future Trends, Privacy and Managerial Considerations in Analytics)

1071BI13 MI4 (M2084) (2888) Wed, 7, 8 (14:10-16:00) (B217)



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http://mail. tku.edu.tw/myday/ 2018-12-26

課程大綱 (Syllabus)

- 週次(Week) 日期(Date) 內容(Subject/Topics)
- 1 2018/09/12 商業智慧實務課程介紹 (Course Orientation for Practices of Business Intelligence)
- 2 2018/09/19 商業智慧、分析與資料科學 (Business Intelligence, Analytics, and Data Science)
- 3 2018/09/26 人工智慧、大數據與雲端運算 (ABC: AI, Big Data, and Cloud Computing)
- 4 2018/10/03 描述性分析I:數據的性質、統計模型與可視化 (Descriptive Analytics I: Nature of Data, Statistical Modeling, and Visualization)
- 5 2018/10/10 國慶紀念日(放假一天)(National Day)(Day off)
- 6 2018/10/17 描述性分析II:商業智慧與資料倉儲 (Descriptive Analytics II: Business Intelligence and Data Warehousing)

課程大綱 (Syllabus)

週次(Week) 日期(Date) 內容(Subject/Topics)

7 2018/10/24 預測性分析I:資料探勘流程、方法與演算法 (Predictive Analytics I: Data Mining Process,

Methods, and Algorithms)

- 8 2018/10/31 預測性分析II:文本、網路與社群媒體分析 (Predictive Analytics II: Text, Web, and Social Media Analytics)
- 9 2018/11/07 期中報告 (Midterm Project Report)
- 10 2018/11/14 期中考試 (Midterm Exam)
- 11 2018/11/21 處方性分析:最佳化與模擬 (Prescriptive Analytics: Optimization and Simulation)

12 2018/11/28 社會網絡分析 (Social Network Analysis)

課程大綱 (Syllabus)

週次(Week) 日期(Date) 內容(Subject/Topics) 13 2018/12/05 機器學習與深度學習

- (Machine Learning and Deep Learning)
- 14 2018/12/12 自然語言處理 (Natural Language Processing)
- 15 2018/12/19 AI交談機器人與對話式商務 (AI Chatbots and Conversational Commerce)
- 16 2018/12/26 商業分析的未來趨勢、隱私與管理考量 (Future Trends, Privacy and Managerial Considerations in Analytics)
- 17 2019/01/02 期末報告 (Final Project Presentation)
- 18 2019/01/09 期末考試 (Final Exam)



Future Trends, Privacy and Managerial **Considerations in** Analytics

Outline

- Internet of Things (IoT)
- Cloud Computing and Business Analytics
- Location-Based Analytics for Organizations
- Issues of Legality, Privacy, and Ethics
- Impacts of Analytics in Organizations
- Data Scientist as a Profession



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

Business Intelligence and Business Analytics



Business Intelligence

Advanced Analytics

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

Building Blocks of IoT Technology Infrastructure



RFID Data Tag

Binary:



Difference between Fog Nodes and a Cloud Platform

| Fog Nodes | Cloud Platform |
|--|--|
| Receive data from IoT devices | Receives and aggregates data from fog nodes |
| Run IoT real-time analytics in millisecond response time | Analysis is performed on huge amounts of business data and can take hours or weeks |
| | |

Physical device / Sensors Fog device generating data

Data Center / Cloud

Internet of Things Ecosystem



Internet of Things Landscape 2018

Internet of Things Landscape 2018

APPLICATIONS (VERTICALS)

| PERSONAL | НОМЕ | VEHICLES | ENTERPRISE | INDUSTRIAL INTERNET |
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PLATFORMS (HORIZONTALS)

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BUILDING BLOCKS

| HARDWARE | INFRASTRUCTURE | CONNECTIVITY | PARTNERS | | | |
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Managerial Considerations in the Internet of Things

- Organizational Alignment
- Interoperability Challenges
- Security

Cloud Computing and Business Analytics

 The National Institute of Standards and Technology (NIST) defines **cloud computing** as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, and services) that can be rapidly provisioned and released with minimal management effort or serviceprovider interaction."

Conceptual Architecture of a Cloud-Oriented Support System



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

Infrastructure, Platform, Software, Data, Information, and Analytics as a Service

- Analytics as a Service (AaaS)
- Data as a Service (DaaS)
- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (laaS)

Technology Stack as a Service for Different Types of Cloud Offerings

| Application | Application | Application | |
|----------------------------|-----------------------|-----------------------|-------------------------|
| Data | Data | Data | |
| Runtime | Runtime | Runtime | Managed by Client |
| Middleware | Middleware | Middleware | Managed by Cloud Vendor |
| Operating System | Operating System | Operating System | |
| Virtualization | Virtualization | Virtualization | |
| Servers | Servers | Servers | |
| Storage | Storage | Storage | |
| Networking | Networking | Networking | |
| nfrastructure as a Service | Platform as a Service | Software as a Service | |
| laaS | PaaS | SaaS | |

Essential Technologies for Cloud Computing

- VIRTUALIZATION
 - Virtualization is the creation of a virtual version of something like an operating system or server
 - Virtualization can be in all three areas of computing:
 - 1. Network virtualization
 - 2. Storage virtualization
 - 3. Server virtualization

Cloud Deployment Models

- Private cloud
 - internal cloud or corporate cloud
- Public cloud
 - the subscriber uses the resources offered by service providers over the Internet
 - Microsoft Azure platform
 - Google App Engine
 - Amazon AWS
- Hybrid cloud
 - moving workloads between private and public cloud

Major Cloud Platform Providers in Analytics

- Amazon Elastic Beanstalk
- IBM Bluemix
- Microsoft Azure
- Google App Engine
- OpenShift

Representative Analytics as a Service (AaaS) Offerings

- ASTER ANALYTICS AS A SERVICE
- IBM WATSON ANALYTICS
- MINEMYTEXT.COM
- SAS VISUAL ANALYTICS AND VISUAL STATISTICS
- TABLEAU
- SNOWFLAKE
- PREDIX BY GENERAL ELECTRIC



Issues of Legality, Privacy, and Ethics

Legal Issues

- What is the value of an expert opinion in court when the expertise is encoded in a computer?
- Who is liable for wrong advice (or information) provided by an intelligent application?
- What happens if a manager enters an incorrect judgment value into an analytic application and the result is damage or a disaster?
- Who owns the knowledge in a knowledge base?
- Can management force experts to contribute their expertise?

Privacy Issues

- Privacy means different things to different people.
- Privacy is the right to be left alone and the right to be free from unreasonable personal intrusions.
- Two rules of privacy

 (1) the right of privacy is not absolute.
 Privacy must be balanced against the needs of society.

(2) The public's right to know is superior to the individual's right to privacy.

Ethics in Decision Making and Support

- Electronic surveillance
- Ethics in DSS design
- Software piracy
- Invasion of individuals' privacy
- Use of proprietary databases
- Use of intellectual property such as knowledge and expertise
- Exposure of employees to unsafe environments related to computers
- Computer accessibility for workers with disabilities
- Accuracy of data, information, and knowledge
- Protection of the rights of users
- Accessibility to information
- Use of corporate computers for non-work-related purposes
- How much decision making to delegate to computers

Impact of Analytics on Organizations



Data Scientist as a Profession

- Data scientist is a role or a job frequently associated with Big Data
- Data scientists use a combination of their business and technical skills to investigate
 Big Data
 - looking for ways to improve current business analytics practices (from descriptive to predictive and prescriptive) and
 - hence to improve decisions for new business opportunities.

Skills that define a Data Scientist



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

Summary

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