Data Visualization | Meerza Ahmed

Tuesday, November 28, 2023 1:00 PM

Lecture 15: Link | Syllabus

**Class Week 15/15*

Database Systems by Coronel & Morris

Chapter 13: Business Intelligence and Data Warehouse

* 13.2-a *Business Intelligence Architecture: Visualization*

Like any critical business IT infrastructure, the BI architecture is composed of many interconnected parts: people, processes, data, and technology working together to facilitate and enhance a business's management and governance.
One of these components of Business Intelligence, is Data Visualization.

* Data Visualization is abstracting data to provide information in a visual format that enhances the user's ability to effectively comprehend the meaning of the data. The goal of data visualization is to allow the user to see the big picture in the most efficient way possible. Tables with hundreds, thousands, or millions of rows of data cannot be processed by the human mind. Providing summarized tabular data to managers does not give them the insight into the meaning of the data that they need to make informed decisions.

* In addition to specialized data visualization software such as Tableau, R, and Gephi, common productivity tools such as Microsoft Excel can often provide surprisingly powerful data visualization. Excel has long provided basic charting abilities and PivotTable and PivotChart capabilities for visualizing spreadsheet data. More recently, the introduction of the PowerPivot add-in has eliminated row and column data limitations and allows for the integration of data from multiple sources. This puts powerful data visualization capabilities on the desktop of most business users

* 14.1-d *Big Data: Other Characteristics*

One of the characteristics of Big Data is "Visualization". Visualization is the ability to graphically present the data in such a way as to make it understandable. Volumes of data can leave decision makers awash in facts but with little understanding of what the facts mean. Visualization is a way of presenting the facts so that decision makers can comprehend the meaning of the information to gain insights

* 13.2-a *Business Intelligence Architecture: Governance*

An added benefit of this meticulous approach to data management and decision making is that it provides a framework for business governance. Governance is a method or process of government. In this case, BI provides a method for controlling and monitoring business health and for consistent decision making. Furthermore, having such governance creates accountability for business decisions. In the present age of business flux, accountability is increasingly important. Had governance been as pivotal to business operations a few years back, crises precipitated by Enron, WorldCom, Arthur Andersen, and the 2008 financial meltdown might have been avoided

* Data Governance

From Wikipedia: 'Data governance is a data management concept concerning the capability that enables an organization to ensure that high data quality exists throughout the complete lifecycle of the data'.

In other words, governance == curation?

NOT REALLY: As per the DAMA International Data Management Book of Knowledge, "Data Governance (DG) is defined as the exercise of authority and control (planning, monitoring, and enforcement) over the management of data assets." In other words, Governance is about POLICIES, which can be seen as complementary to Curation.

So an organization would have Governance policies in place, which would aid in Curation's producing customized business data.

* GenAI

'Generative AI' - A Revolution
Generative AI, very loosely speaking, 'runs a neural network BACKWARDS'!

Rather than learn to classify new data using existing data, why not GENERATE new data instead?

Researchers tried this, but with unimpressive results.

In 2014, Ian Goodfellow got a much better idea than the 'SOTA' - why not pair up TWO NNs in opposing order - one a generator (eager 'student'), and the other, a discriminator (strict 'teacher')? His invention is called a 'GAN'.

* Review

DATA DATA DATA

The centrality of data…

Society (government, politics, education, law enforcement...), commerce, environment, science/STEM, medicine, entertainment, communication, agriculture, manufacturing... (EVERYTHING) - DATA is an integral part!

In this course, you learned principles: of data organization, usage, applications.

The focus of the course: practical aspects of creating, storing, querying, using... data.

The vast 'tech' infrastructure: processing (cloud, GPUs...), storing (cloud...), communications (the Web, handhelds...) all are [seem] tailor-made for handling DATA!