

Data Mining 2016: Data mining with data visualization- Robert S Laramee - Swansea University

Robert S Laramee

Swansea University, UK

Some people believe that we live in the age of information. I believe it's much more accurate to say we live in the age of data. With the rapid advancement of massive data storage technologies and therefore the ever-decreasing costs of hardware, our ability to derive and store data is unprecedented. However, an outsized gap remains between our ability to get and store large collections of complex, time-dependent data and our ability to derive useful information and knowledge from it. Data visualization leverages our most powerful sense, vision, so as to derive knowledge and gain insight into large, multivariate data sets that describe complicated and sometimes time-dependent behavior. This talk presents data processing from the attitude of knowledge visualization with three very different applications: Computational Fluid Dynamics (CFD), marine biology and rugby, showcasing a number of visualizations strengths, weaknesses and goals. Data visualization is critical to successful data processing and extracting knowledge and insight from big data.

Data Mining is used to find patterns, anomalies, and correlation in the large dataset to make the predictions using broad range of techniques, this extracted information is used by the organization to increase there revenue, cost-cutting reducing risk, improving customer relationship, etc. whereas data visualization is the graphical representation of the data and information extracted from data mining using the visual elements like graph, chart, and maps, data visualization tool, and techniques helps in analyzing massive amount of data and make decision on top of it. Without the concept of visualization, mining and analysis doesn't play any role of importance as data processing is that the idea of finding inferences by analyzing the info through patterns and those patterns can only be represented by different visualization techniques.

Data Mining is that the process of identifying new patterns and insights in data. As the volume of knowledge collected and stored in databases grows,

there's a growing got to provide data summarization (e.g., through visualization), identify important patterns and trends, and act upon the findings. Insight derived from data processing can provide tremendous value , often crucial to businesses trying to find competitive advantages. A short review of knowledge mining and important theoretical results is provided, followed by recent advances and challenges.

The amount of data stored on electronic media is growing exponentially fast. Today's data warehouses dwarf the most important databases built a decade ago, and making sense of such data is becoming harder and tougher . Online retailing in the Internet age, for example, is very different than retailing a decade ago because the three most important factors of the past (location, location, and location) are irrelevant for online stores. One of the greatest challenges we face today is making sense of all this data. Data mining, or knowledge discovery, is that the process of identifying new patterns and insights in data, whether it's for understanding the Human Genome to develop new drugs, for discovering new patterns in recent Census data to warn about hidden trends, or for understanding your customers better at an electronic webstore in order to provide a personalized one-to-one experience. The examples during this paper are from the e-commerce world, but data processing has been used extensively in multiple domains including many scientific applications. The paper is additionally restricted to structured mining; significant literature exists for text mining and knowledge retrieval.

Biography

Robert S Laramee received a Bachelor's degree in Physics from the University of Massachusetts, Amherst. In 2000, he received a Master's degree in Computer Science from the University of New Hampshire, Durham. He was awarded a PhD from the Vienna University of Technology, Austria at the Institute of Computer Graphics and Algorithms in 2005. From 2001 to 2006 he was a Researcher at the

VRVis Research Center (www.vrvis.at) and a Software Engineer at AVL (www.avl.com) in the Department of Advanced Simulation Technologies. Currently, he is an Associate Professor in the Department of Computer Science at the Swansea University, Wales. His research interests are in the areas of Big Data Visualization, Visual Analytics, and Human-Computer Interaction. He has published more than 100 peer-reviewed papers in scientific.

Email: r.s.laramee@swansea.ac.uk