

# Conception about the Data Visualization Techniques Including Data Stream Mining and Bioinformatics

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## Abstract

Data visualisation techniques are effectively beneficial to for data streaming in a significant way. Graphical representation is also measured with help of this data visualisation process. Several types of graphs, images, charts and maps are used to maintain data visualisation process. Decisions making process and problem-solving ability is also enhanced with help of these data visualisation procedures. Pie charts, bar charts, waterfall charts, Gantt chart and heat map are used to maintain the data visualisation process. Bullet graphs are also useful for this conception about data visualisation process. Researcher uses “interpretivism” research philosophy, “inductive” research approach and “qualitative” research method to gather information related to this study. Creative and innovative ideas and thoughts related to data are also used with help of this particular data stream mining in a significant way. Data visualisation market value and big data market size is also mentioned in this study. Constant cycles of news and entertainment are also gathered with help of this data visualisation techniques including data stream mining.

## Keywords

Bar charts, data stream mining, Data visualisation, pie charts.

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## INTRODUCTION

Graphical representation of information and data related to a topic is known as data visualisation. Several types of visual elements like charts, graphs, images and maps are used in data to understand concepts. Data visualisation tools help to maintain trends, outliers and patterns in data. An accessible way to see and understand to finish a work within a given deadline is also known to everyone with help of these data visualisation concepts. Proper strategy of work can easily be understood by this data visualisation. Employees can easily gather excellent ways to provide data with help of data visualisation. Several types of information related to data are available, by which everyone can easily finish their work in a significant way. Data driven decisions are also gathered with help of these data visualisation concepts in the global market [1]. In order to create several types of concepts related to data is also managed by this data visualisation process.

Visualisation process helps to gather, interpret and draw conclusions. Usage of tools and techniques is known to everyone by these data visualisation concepts. Several types of visualisation techniques are available such as: bar chart, pie chart, Gantt chart, heat map, histogram, waterfall chart, area chart and bullet graph. Network diagrams and correlation matrix are critically evaluated with help of data visualisation concepts. In order to become a more effective communicator, data visualisation process is effectively beneficial. Cartograms, bubble clouds, polar areas, radial trees and span charts are also useful to manage data visualisation procedures [2]. Design and colours are also maintained for this data visualisation procedure. High resolution images are used for these procedures to finish a work within a given deadline. This particular process helps to

share and interpret data and information. Data visualisation concept allows interpreting complex data in an organised way.

## MATERIALS AND METHODS

Methodological view of a research work is effectively beneficial to collect in depth knowledge and information. Research philosophy helps to gather, analyse and use several types of data. Purpose, design and methodology of a research work is known to everyone with help of this research philosophy. In this study, “interpretivism” research philosophy is used by researchers to gather data. A specific role in observing social world is also enhanced by this research philosophy. In order to generate a deep and rich understanding of data is also managed with help of this “interpretivism” research philosophy. Researcher can easily identify theories related to data by this research approach. Research approach helps to maintain research methods in an organised way. Researcher uses an “inductive” research approach to discuss data visualisation concepts. Proper strategy of a research work is maintained by researcher with help of these data visualisation concepts.

Research design helps to maintain analytical approach of a research work. Researcher can easily conclude a work with help of this design. Research design helps researcher to maintain a coherent and logical way of doing research work. Characteristics of a research work is known to everyone by this research design. Here, researcher uses “cross sectional” research design to maintain proper strategy and work process. Secondary data collection method is maintained by researcher to gather relevant and authentic data. This data is collected with help of a qualitative research type. Every research work needs more time and money to finish their

research work. Hence, time and budget are totally saved by researcher with help of this secondary data collection method. Researcher have a responsibility to maintain authenticity of a work. Several types of online journals, books, websites and channels are available to gather data. However, this secondary data is collected from peer reviewed journals which are published after 2019. This should be beneficial for everyone to utilise credible sources of a research work.

### RESULTS

Data visualisation techniques are effectively beneficial to achieve goals and objectives in future. Several types of senses are available to manage data visualisation concepts such as: smell, touch, taste, sight and hearing. This process of visualising helps to maintain subconscious concepts. Two types of visualisations are available such as: process visualisation and outcome visualisation [3]. In order to gain best results are gained with help of these two types of data visualisation process. In recent days, digitalisation process is enhanced throughout the world on a daily basis. Constant cycles of news and entertainment are gathered with help of these visualising concepts. Data visualisation allows to maintain future vision of reality. A bunch of parameters related to data is also gathered by this data visualisation process. Data visualisation helps to maintain creative and innovative ideas related to data [4]. Several steps are engaged to visualisation practices such as: provide detailed information related to 5 senses, identify emotions attached to outcome, select proper action to gain desired outcome, enhance skills and knowledge related to data and maintain proper time and budget related to data visualisation procedure.

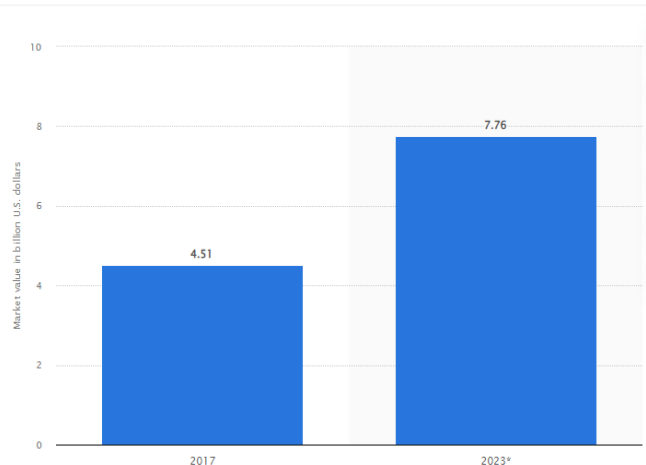
Steps are followed to practise visualisation such as: create a vision board, maintain a guideline related to visualisation meditation, understand usage of index cards, provide proper description and picture and manage utilisation procedure of exposure. Vision board helps to collect words and images that helps to achieve goals and objectives [5]. In order to gain inspiration, data visualisation procedure is immensely beneficial to create a vision board. In recent days, everyone uses YouTube channels to gather information related to data. Several types of free meditation videos are available on YouTube. An interactive visualisation procedure helps to represent objectives and goals. Relaxation time is also enhanced with help of this data visualisation procedure. Guided imagery manages this data visualisation process in an organised manner [6]. Index cards are effectively beneficial to collect several types of information. In order to summarise brief explanations index cards are immensely beneficial to maintain data visualisation concerns.

Data visualisation helps to make a list of goals for working forward. Pictures and descriptions are immensely beneficial for maintaining this data visualisation procedure. Everyone can easily understand graphical representation and several types of images with help of this particular process. Data

visualisation process helps to make better decisions related to data [7]. Colours and patterns are key elements to maintain data stream mining. Visual culture and advertisements on TV and movies are also beneficial for this data visualisation process. Visual art related to data is gathered with help of data visualisation tools. Trends and outliers of data are managed by this data stream mining. Data visualisation process helps to manage massive spreadsheets of data to achieve purpose. Several types of information related to data are easily shared by this data mining procedure. Opportunities are explored rapidly with help of this data visualisation process [8]. Several types of data visualisation tools help to maintain visual patterns and relationships among data.

Sometimes data related to information is biased and inaccurate. Misleading colour contrast of design elements play an essential role in visualising tools. High degrees of colour contrast help to enhance the belief of viewers. Value magnitude with colour is also depicted with help of this colour contrast [9]. In these heatmaps, orange and red colour appears as a high value of data visualisation tools and blue, green colour provides lower value of these tools. Heat and heightened activity are also managed with help of this impression of data visualisation process. Everyone can easily compare and contrast data series with help of these colour concepts. High contrast colour paintings are beneficial to maintain a degree of data disparity. 3D graphics are immensely important to use several types of tools related to data visualisation.

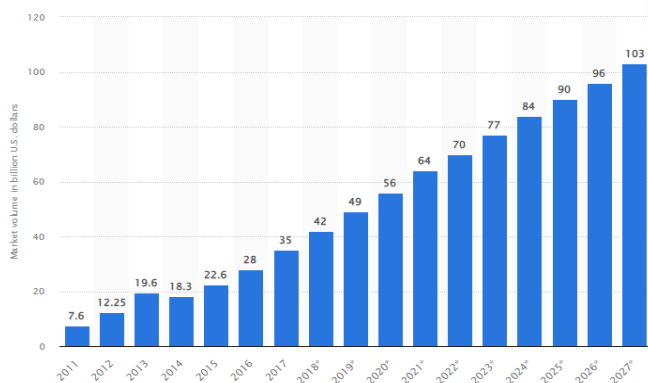
Important information is engaged with help of these 3D graphics in a successive manner. This 3D graphics is necessary and more valuable than 2D graphics to interpret gatherer data. Everyone can easily be attracted to 3D graphics related to the data visualisation process. Data visualisation market value is enhanced with the help of data mining processes in global market. The value was 4.51 billion US dollars in year of 2017 [10]. This particular value increases to 7.76 billion US dollars within the year of 2023. CAGR percentage of this particular value is 9.47%. This creates a positive impact on the data visualisation process.



**Figure 1:** Data visualisation market value

Timeless design problems are gathered with help of this data visualisation process. Communication strategy is also enhanced by this data visualisation process. Data visualising tools are beneficial to communicate data in an organised way. Different types of information related to data visualisation process is also helpful to manage graphic design. Data varies from several types of geographic regions throughout the world. Dramatic aspects are also gathered with help of this data visualisation process [11]. Designers can easily choose several types of scale values and colours on graphs to maintain data visualising tools. Aesthetic appeal related to data is also managed with help of this accurate data presentation. Omitting baselines and truncating scales are immensely beneficial for managing data visualisation procedures. Description of text related to data is also mentioned with help of this data visualisation process. Several types of high-resolution images are used by these visualising tools in a successive manner.

Visualised data is processed at a higher speed with help of these visualisation concepts. Example: in case employees of an organisation are overloaded with several pieces of information, visuals allow to maintain a quick process and also identify necessary strategy of a work. For this reason, this data visualisation process is effectively beneficial for each and every company globally. In recent days, every learner always tries to gather new information related to data. Data visualisation dashboards help to support those visual learners [12]. Online data visualisation tools help to interpret gathered visualised data. Modern technology is also beneficial for this data mining process, for this reason, spreadsheets related to visualised data are also maintained by this procedure. Any complicated graphs, images and charts can easily be readable with help of this visualised data. In Depth knowledge and skills related to data are also enhanced and gained proper insights. Big data market size is enhanced to 103 billion US dollars in the year of 2027 [13]. This should be beneficial to expand market size and revenue in an organised manner.



**Figure 2:** Big data market size revenue

Traditional reports are useful to maintain data visualisation tools in a significant way. Habit of an organisation is maintained properly by this visualising tools. A company can easily enhance their rate of production and profitability with

help of this data mining process. Data visualisation framework helps to maintain characteristics of a company globally. Organisational culture and performance can easily manage with help of these data mining procedures [14]. A proper strategy of work is maintained properly in workplace. Employees can easily enhance their skills and knowledge related to work by this particular process. A company can easily provide better quality of products and services in global market to attract more customers in a significant way. Every customer always tries to grab better quality products and services. For this reason, an organisation also tries to maintain their work process and strategy with help of this data visualisation process. One of the most common and basic data visualisation techniques is pie charts.

Wide range of applications related to data visualisation are used with the help of this process. Illustrating proportions of data can easily be visualised by these pie charts. These pie charts are effectively useful and understandable for everyone. Everyone is familiar with this pie chart to gather several types of information related to data mining process [15]. Simple and easy framework is known to everyone by these pie charts. In case, a person does not know about procedure of a work, pie charts are effectively beneficial for those people to understand process. Pie charts help to maintain key features of a work in a successive manner. Viewers always try to gather more explanations related to data, by which these individuals can easily finish their work in a significant way [16]. Several types of complex information are available globally, pie charts are immensely beneficial to display complex information in a simple way. Everyone can easily understand the complex information in these pie charts.

Another easy and common method of data visualisation process is bar chart or bar graph. In this chart, two axes are provided here, one axis represents categories being compared, other one refers to a measured value. Length of a bar suitcases measurement of each group according to value. Labelling and clarity of a chart is also managed with help of this bar chart, by which data visualisation process is managed in a significant way [17]. A bunch of complex data sets is also measured by this bar chart to maintain a simple way for expressing data. Pie charts are effectively beneficial to present a fractional part of a whole. This is immensely evident to use as a communication tool for even uninformed audiences. An immediate analysis of data can easily be maintained by these pie charts. Viewers can understand information related to data visualisation procedure in a successive manner. Fractional part of data is also provided with help of these pie charts. Mission of this pie chart is to show whole relationship in a data set.

Patterns and trends of techniques are known to everyone in a significant way by this bar chart. A reader can easily present a visual form of data to everyone, by which information related to data is also known to everyone. Categorical variables are represented with help of this bar chart representation globally. Several types of bar charts are available such as: vertical bar charts, horizontal, grouped and

stacked bar charts. Time series data are critically evaluated with help of these vertical bar charts. Discrete variables are also mentioned by these bar charts. An excellent choice to focus a change in magnitude is known to everyone with help of these vertical bars. Description of components, time series statistics and frequency distribution are mentioned with help of these vertical bar charts [18]. Vertical bar charts help to gather the best information related to data dealing process. Effective means of comparing sets of data about same places and items are mentioned with help of these group bar charts.

This chart allows to make direct comparisons between two series of data on the same chart. Sometimes, a person can easily be confused by these charts to see two comparisons within one chart. In case this chart represents so many series of data, grouped bar chart becomes cluttered. Sometimes, lack of space at foot of each bar creates a negative impact on data visualisation process. Category labels in charts are effectively long, horizontal bar charts are immensely beneficial for displaying data [19]. Several types of information related to data visualisation process is displayed by these horizontal bar charts. Preliminary data analysis tools are used to represent segments of total. This bar representation is difficult to analyse. Several types of contrast values are represented by these stacked bar charts. Contrast values are also represented with help of these stacked bar charts. Continuous interval of data is also defined by these histograms.

Visualisations are beneficial to identify concentrated values and data. Several types of information related to data visualisation process is known to everyone with help of this histogram chart. Histogram charts help to maintain unusual values and gaps related to data mining and visualisation procedure. Frequency of a particular occurrence is also mentioned by this histogram chart. Histograms help to maintain performance of online websites. Measurement of online clicks related to websites are also mentioned with help of this histogram chart [20]. Major features of distribution data are also mentioned by this histogram chart. Essential form to analyse all gathered data in a successive manner can easily maintain by this particular chart. Large data sets are critically evaluated by these histograms in a significant way. Several types of distributions are available for histogram such as: uniform distribution, normal distribution, bi modal distribution, random and left skewed distribution. V shape figure is represented with help of this normal distribution of histogram chart.

Bi model histogram charts represent two normal distributions of histogram at a same graph. Data distribution occurrence is also mentioned with help of this histogram chart. Gathered data are collected, gathered and analysed separately for both peaks of this particular graph. Right skewed distribution of histogram represents large values on left side and these values are decreasing from left to right. This particular graph is called a positively skewed distribution graph. Left skewed graph refers to the highest values on right side and values related to data visualisation

process are represented by this process [21]. This particular graph is known to everyone as a negatively skewed distribution. A lot of random peaks are visible for this particular chart and data related to this particular graph is collected from several types of sources. This graph mainly occurs at time of maintaining number systems. Several types of data are collected and analysed by this particular distribution of histogram.

## DISCUSSION

Data visualisation process is a key factor to gather several types of data from different sources. Five natural senses are also gathered with help of this particular visualisation process. This visualisation process helps to maintain proper process and strategy for gathering data. Process and outcome visualisation are two types of data mining process. 4 levels of visualisation stages are available such as: analysis, exploration, synthesis and presentation [22]. Subprocesses, activities, risks and controls are measured with help of this process of data visualisation. Risk management processes are also mitigated by these data visualisation procedures. Data visualisation process helps to maintain data analysis process of an organisation. Business entity organisation charts and process diagrams are also mentioned by this data visualisation process. Data mining processes help to maintain another perspective of a workflow. Team work process is also enhanced with help of this visualise process. Work strategy and framework can easily gain with help of this data visualisation process.

Visualisation process helps to create a clear picture related to data for analysing strategy of data. In depth knowledge and skills related to data are also collected by this data mining process globally. Imagination power, decision making process and problem-solving ability is also enhanced by this particular process. Effective visualisation design mainly refers to propose, content, structure, format and designs types of data mining process. Video production, graphic design, photography and illustration are four main types of visual communications. Visualisation concepts help to gain confidence to maintain data mining processes in a successive manner. Visualisation process can easily decrease anxiety to maintain proper strategy of work. Performance level is also enhanced with help of this particular process. Employees can easily provide their better performance in the workplace by this visualised data concepts. Management of a company has a responsibility to motivate their employees. These individuals can easily produce better quality products.

A healthy and wealthy working circumstances are also maintained by this data visualising process. Employees must adopt healthier behaviours in workplace to enhance their performance level. Data visualisation process can easily enhance muscle strength and also reduces risk factors related to data. Work Stress is also mitigated with help of data visualisation process. Aims and objectives of a company are also managed by this particular process globally. Digitalisation process is also enhanced by this particular

strategy to enhance their work quality and quantity [23]. Data visualisation process helps to gain creativity and innovative ideas related to data. Several types of steps are followed to maintain procedures of data visualisation. Visualising outcomes help to enhance confidence related to visualising data. Good things related to the data visualisation process is also known to everyone by this goal visualisation procedure. Vision board plays an essential role to maintain data visualisation process in a successive manner.

Index cards play an essential role to maintain data visualisation process. Several types of data for collecting new information are also gathered by this particular process globally. Data driven decision making process and problem-solving ability is also enhanced by this data collecting process. This process helps presenter to communicate data. Several types of tools are used to maintain data visualisation procedures. Project management related data are also gathered with help of this Gantt chart. Daily progress reports are also gathered by this Gantt chart. Progression of tasks are maintained with help of this data visualisation process. Gantt charts are properly utilised to display timelines of a project work. Every aspect of a project work is known to everyone with help of this data visualisation process. Aims and objectives of a work is also maintained by this data visualising procedures. Heat map is an essential type of visualisation globally, several types of colours are mentioned in this chart to communicate values in a significant way. Trends and procedures of a communicate values are also mentioned with help of this data mining process and data visualisation procedure. Waterfall chart is a visual representation of different factors such as time. Essential goal of this chart is to provide grown value and declined value over a defined period of time. Waterfall charts are popular to spend and earn more timings related to this data visualisation process.

### CONCLUSION

Data visualisation process mainly refers to the graphical representation of data. Several types of graphs, charts, images and maps are used to maintain those data visualisation processes. Trends, outliers and patterns are mainly used with help of this data mining process. Pie charts, bar charts, histograms, Gantt charts and waterfall charts are mainly used to interpret several types of data visualisation process. ACES plays an important role to maintain great visualisation concepts. This ACES refers to Accurate, clear, empowering and succinct and these should be beneficial for data visualisation process. Data and its trends should be accurately represented with help of this data visualisation process. Visualisation process should be clear and understandable to everyone, by which a person can easily understand data visualisation process. Readers should know proper strategy and process of work to maintain data visualisation process. Advantages of pie charts and waterfall charts are also mentioned here. Data mining process is effectively beneficial to enhance data visualisation process.

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