

Extreme Visualization: Squeezing a Billion Records into a Million Pixels

Database searches are frequently performed with query languages and form fill in templates, with the results shown in tabular lists. Query specification, on the other hand, employs dynamic queries sliders and other graphical choices the effective technologies support a process of information-seeking that leads to substantial discoveries for individual users, business teams, and larger communities. Effective technologies facilitate an information-seeking process that leads to significant discoveries for individual users, corporate teams, and wider communities.

In summary, the issues that must be addressed are as follows:

- visual representations that are both compact and information abundant
- Optimize display performance for 100msec updates
- The perception of rich presentations by humans using specific markers, aggregation symbols, and density charts
- performance of database during exploration
- Interaction controls that are cognitively understandable and coordinated windows

types of visualizations:

- **ATOMIC VISUALIZATIONS:** It is a basic visualization such as Histograms, time series plots, and two-dimensional scattergrams are examples of fundamental visualizations that show one marker for each data item when users manage the presentation with innovative widgets such as dynamic query sliders to choose subsets from enormous databases, these visualizations become more helpful.
- **AGGREGATE VISUALIZATIONS:** The natural next step is to increase the number of records from a million to a billion Some researchers are working towards this aim by transitioning from mega-pixel to giga-pixel displays. This is frequently performed by tiling 50 or more flat-panel monitors to create wall-sized, high-resolution displays This brute force technique of displaying a billion records has some attraction, but it is difficult to view the entire image while still recognizing individual pixels.
- **DENSITY PLOT VISUALIZATIONS:** When a visualization has individual markers representing individual data, clustering algorithms can be used to group them into aggregate markers. Two-dimensional projections using scattergrams are widely used for multivariate data, although three-dimensional density plots have been constructed density charts can indicate concentrations of time points in time series data.

To summarize, visualization strategies differ based on the context. Gigabyte displays, for example, will be valuable for specific jobs, but novel interface design will likely offer larger payoffs and wider usage for other tasks, and so on. Finally, if significant relationships can be established between academics and implementers of information visualization and database administration, the usage of billion record visualizations might become common.