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The papers that I choose as the primary paper is that " **Designing Progressive and Interactive Analytics Processes for High-Dimensional Data Analysis** ", and the secondary paper that I choose is that " **Progressive Visual Analytics: User-Driven Visual Exploration of In-Progress Analytics** "

In the interactive data analysis processes, people always treat the human perceptual and cognitive capabilities of users as the supreme part in the communication between the human and the computer. After the kind of study, people would propose to reduce the dimensionality of the data or to perform clustering, to improve ingratiated computation, however they may be not the optimal solutions.

When people talk about interactive and iterative conversations between people and computers, we name them visual analysis (VA). The interactive analysis process is the sequence of actions taken by the user responses by the computer. With the VA methodologies, the input from the user would be either a trigger that can change the state of a visualization, or a diversification that can cause the different computations. Then these computations may render the computers to recalculate again and update result in the visual representations. When those steps keep doing for couples times, this iterative discourse could be observed and generate useful information. But there are more respect that also have effect on it.

The firsts paper focus on, within the high-dimensional data analysis condition, computers should give the first result in an acceptable time instead of letting user wait for the computations finish. Subsequently, user would either get a more accurate result or keep moving forward by changing the input. To come out with a good solution, the team analysis some factors that are not well studied before, such as: the in corporate progressive algorithms, methods to facilitate the interaction, and so on. So here, we need to introduce the 3 human constants: The first constant is related to the perceptual level of human visual perceptual continuous animation changes. The second constant is handles the immediate response level that the communication part is exchanging to form a dialogue. The last constant is the unit task constant, which determines the limits of the basic tasks to be completed during this dialogue.

As to keep the temporal limitations set forth by the human time constants. They use the online PCA algorithm to update the new result and minimize the iterative computations. In this case, although, at the beginning, it is hard to get the accurate

result, after the algorithm keeps working on the background, the result would become accurate progressively. So, it can not only finish the computation but also update the visualizations in the limit time.

The secondary paper is Progressive Visual Analytics: User-Driven Visual Exploration of In-Progress Analytics.

This paper also focuses on the hardness that it is different to recompute whole project if the data and algorithms are too complex -- in the other words, this paper tries to improve progressive visual analysis which relies on adjusting the analysis algorithm to produce meaningful partial results and support analysts to intervene without sacrificing computational speed. Both of the aspects would slow down the speed of generating consequences, so that users are forced to wait before the visual interactions showing out.

Different from the other systems, that the event sequence data is pre-processed and pre-calculated prior to visualization, thus not meeting the criteria or gaining the benefits of progressive visual analysis, they built a prototype system called Progressive Insights which is designed to support analysts searching for common event patterns. The Progressive Insight (PI) would work together with SPAM algorithm that is designed to identify consequence within this data that show often.

The best part is the SPAM algorithm is naively progressive in that it returns patterns as it find them. Still if they use this algorithm that is depth-first, they can not find the general result which can represent the overall data in the early process. So they modify SPAM algorithm to work as breadth-first traversal one. After this change, the algorithm shows patterns from shortest to longest, in other words, it can give a short but frequent patterns before moving onto find those that are longer and more specific.
Those patterns will be shown as list-view, scatterplot-view, and tree view.

They also design a interface that can display the victual result properly without interrupting users' cognitive work. Such as highlighting the selected pattern in the different blue color.

At the end, they introduced progressive visual analysis, which is an example that allows users to access semantically meaningful partial results during analysis execution and allows them to explore these partial results in integration, and interactive visualizations.

Comparing with both of these paper which focus on Progressive Visual Analysis, the first one uses its algorithm on business field, however the second one uses its

algorithm on medical field. The paper from Stolper, is motivated by similar objectives in visualization domain, and also provides a set of high level design considerations that deem important in the progressive analysis study. This paper inspires the Turkay to do the research another direction that is high-dimensional analysis within temporally controlled. Beside that, Turkay also get the ideas about how to deal with animation in the interface from Stolper.