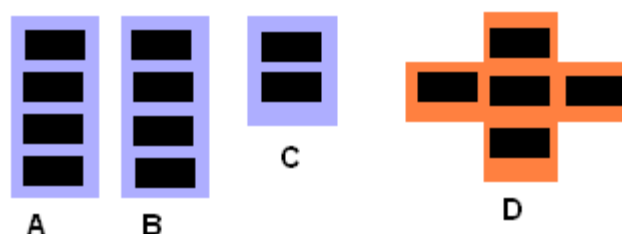


New Approaches to Designing of Views and Interface Techniques for Systems of Parallel Computing Software Visualization

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The problem of visualization interface techniques for parallel computing software visualization systems is very actual. To some extent exactly the absence of effective of visualization and the interface techniques has led to stagnation in this domain. Earlier we offered the idea of the organization a data display on base of “Unlimited Page”, also as well as techniques of interaction between objects based on Mutual Displacement. In this paper these ideas are considered with reference to some problems arising at Software Visualization domain.

Let's designate shortly a problem for which we are going to create visualization. As representation unit the knot is considered. The knot is characterised by various significant parametres which can vary in due course. Besides, the knot can be marked as free or occupied. The user can create a task and execute it on a group of knots. Set of several knots we will name *cluster*. And, we can add free knot in a *cluster* or will remove the occupied knot from a *cluster*. For visualization we will use idea of “Unlimited Page”, with windows. Each knot in a system is a separate window on the page. In this case it is necessary for user to solve **a problem of recognition and categorization** “a task executed on a cluster”, and also - **a control problem** (creations of clusters, addition in cluster new knots etc.) . The first problem is solved by spatial arrangement of group of knots for the decision of the same task. That is the “task” in visualization model is the composite object made from separate knots. An user may consider the “task” as a complete form. Various tasks (that is various categories of tasks) are recognized as a various Gestalt. For an illustration see the picture below:



We understand, that the tasks *A*, *B* and *C* concern one category, and problem *D* to another. We see, that problems *A*, *B* are carried out on 4 knots, and problem *C* on 2. Also we know what to do, that problems *A*, *B* and *C* were carried out with identical efficiency.

It is possible to use for control a large touch screen. (Generally it may be considered as interactive “table”.) Some control elements are intuitively clear (for example, such as moving of objects). For others it is necessary to develop the system of gestures.

Let's consider the gestures connected with scaling. It is possible to allocate two types of scaling - local and global. As local, we understand changes of a window sizes, thus other windows may only move. For size shortening, we use gesture “to shift fingers”, and for increasing shortening - “to move apart fingers”. Focusing at a window at which it is necessary to change the size. This gesture became practically standard, many owners of phones with touch screens are familiar with it. Global scaling is an ascent at “flight” over “Unlimited Page”. Flight is a movement on the Page in any directions. We will organize flight very simply (as we suspect, that it will be one of the most demanded control elements): sliding by a finger. The movement sets a vector of flight direction. Such decision reminds the expanded scrolling strip. One may scroll in directions which are set by the user. The innovation consists of two gestures – i) a choice a finger of a point of focusing, and ii) setting (after a small pause) another finger on the right. We'll lose “altitude”, during the gesture duration. “To pull up” one may keep the second finger at the left.

At the first stage the prototype in which the role of knots is played by RESTful-services is

developed to test our ideas and to reveal of “bottlenecks” of the project. As tasks the web-pages displayed data from the services are considered.