

RESEARCH MECHANISMS OF SOFTWARE'S INTERFACES VISUAL COGNITION

Actuality: In our quickly-changing, progressive computer world, we are looking for faster and more natural ways for users to communicate with a computer, especially to work with the programs, interface evolutions, and increasing skills and experience of the humans. Direct and easy working interfaces will have great success in future, because they draw on analogies to the human skills, such as pointing, grabbing, moving objects in space. For designing effective interface it is necessary to investigate the behavior of the natural eye movements.

Problem: As we know eye movements of each person are similar because the evolution provided some mechanisms how do people react on things. For the algorithm of the best designing of the techniques and peculiarities of the user, to try to use specific mechanisms of eye movements, which are natural for people.

Task: It is necessary to propose an approach of design convenient interface, using natural mechanisms of eye moving.

Methods of researching: It's necessary to investigate the biological characteristics of eye and natural eye movements, attempt to recognize appropriate interface patterns on result of the data obtainable from the trace of a user's eye movements over approximately 30 seconds, while performing normal work, and find out the algorithm due to the connection of eye movements and program interface, which meshes with the approach of the interface environments according to the user's position, for example the head and eyes, or position of the body, and design interaction techniques for the known characteristics of eye movements, especially when the eyeball is held in place by three pairs of opposing muscles, so that seeing an object clearly, person must move the eyeball in the way of the object appearance, directly in front of the eye and in fact of it, person will be able to pay attention to smaller areas more than the making any eye movements. Than it is necessary to research of the comfortableness of the interfaces, according to the human-computer interaction techniques. Characteristics of human eye, its movements, possibilities and skills of person for more effective communication and interaction with the program interface should be investigated too. Also it is important to find out the way, how to design techniques (patterns) that will show the user-computer interconnection in the sphere of relationship between eye movements and interfaces.

Result: According to the skills that the user already possesses and natural characteristics and possibilities of the human eyes software interfaces should be designed. It will provide to powerful improvements in the naturalness, convenience of performance and software designing. It will make a process of the cognitive burden of user-computer interacting more easier. Such connections provide more essential way of getting knowledge about new interfaces (intuitive interface designing).

Supervisor –O.V. Chebanyuk, PhD