

Abstract. In order to develop high-quality software it is necessary to reflect all customer requirements in the specification, thus, to have a global view on the future software for customers and performers. One of the options to achieve mutual understanding is to develop a prototype of a user interface.

The article describes the methods of selecting an alternative version of the interface template using such artificial intelligence methods as expert evaluation and the fuzzy-set theory. Users might be divided into five groups on the basis of individual characteristics (a newbie, usual, experienced, skilled, an administrator). The article defines the basic parameters of individual characteristics which may help to classify users when designing interfaces (computer literacy, systematic experience, experience of working with similar programs, typing, thinking, memory, motor skills, blindness, concentration, emotional stability).

The paper describes mathematical support and software for solving the problems of intelligent user interface design. Task implementation is performed in three stages. The first stage is “Forming and assessing expert group competence”. It defines the characteristics of experts. A quantitative description of experts’ characteristics is based on the calculation of relative ratios of competence according to the results of experts’ statements on the Advisory group. The second stage is “Group expert assessment of the object with direct assessment”. It determines recurrent relations for iterations. The third phase is “Building a fuzzy model on fuzzy binary relations”. It operates by two fuzzy sets: a set of user groups and a variety of interface templates that are maximally effective for users with these characteristics. Fuzzy model input data are selected fuzzy sets, the output data are the degrees of matching interface patterns to users.

The user interface design process is automated on the basis of the proposed methodology in order to improve objectivity and optimize decisions taken by software developers.

Keywords: software, user interface, template interface, interface prototype, technical specification, expert assessment, knowledge base, fuzzy relations.

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