MULTILEVEL PROCESSING OF THE INFORMATION ON THE BASIS OF INDISTINCT LOGIC ON THE BASIS PARALLEL CALCULATIONS

Atanov S.K., t.s.c., the senior lecturer of chair computer systems, the Kazakh agrotechnical university of S.Sejfullin

The scheme of multilevel processing of the information, based on indistinct logic and groups of indistinct controllers co-operating among themselves which allows to make an exchange of knowledge between controllers is offered. It is discussed, as on the basis of the specified scheme it is possible to execute uniform оптоэлектронную system of indistinct management initially untied among themselves objects.

The technique of creation of a uniform control system of a set isolated measuring and the process equipment, initially untied among themselves automation means, is an actual problem and for physical laboratory, and for manufacture. However, attempts to apply for this purpose standard means (microcontrollers, local networks, a software under Windows) are usually connected with unacceptably big expenses of forces, time and means. Entering of the further corrective amendments into carried out algorithms and addition of new components appear thus problematic.

Methods of the indistinct logic [1] which practical applicability, however, restrains first of all a problem "экспоненциального explosion" numbers of rules of an indistinct conclusion with growth of number of variables [2] are rather convenient for the effective description of similar multiple parametre systems. Essential feature of an offered technique consists that the multiple parametre indistinct controller is supposed to carry out "communities of intellectual objects" in a kind, i.e. consisting of the several hardware-divided indistinct controllers co-operating among themselves with the complicated structure which allows each object to estimate independently a current condition of other objects, to give out parametres-inquiries to other objects and to correct own current knowledge base (sets of functions of an accessory and rules of an indistinct conclusion).

Thus each object constantly and irrespective of other objects "watches" a condition of all other objects, and in case of receipt of doubtful data from own control gauges or inadequate messages from other objects, realises own scenario (algorithm) of the further actions, limiting the further interaction with faulty object or group of objects. The specified feature raises safety and reliability of work expensive and critical a component of all system.

The offered approach is focused on application оптоэлектронных schemes of the indistinct controller on base оптоэлектронных gates MINIMUM, MAXIMUM, and allows to apply in the maximum degree approaches of parallel calculations. Each object of "intellectual community" should be made at least of three indistinct controllers connected among themselves with usual structure where the basic controller serves a set of gauges and actuation mechanisms. The second, additional controller carries out functions of the analysis of a current situation, processing some parametres describing a condition of other objects. In turn, signals about own condition of each object are periodically generated by the third, additional controller. Three-kontrollernaja scheme of object in a combination to the fibre-optical local network connecting gauges, logic knots and executive mechanisms, gives the chance to carry out at level "communities of objects" an asynchronous mode of processing, and in object to reduce to minima of a problem of the account of time delays, allowing to the greatest degree to delete system components from each other.

Training and correction of knowledge in such structure is reduced to rewritings in the electronic RAM of object, and can separately be carried out on each object. Practical realisation of objects of discussed multiple parametre system can be executed as on the basis of original оптоэлектронных workings out, and микроконтроллерных installations and PC.

The literature list

1.Zadeh L.A. Fuzzy Sets. // Inform and Control. 1965. V.8. P.338–353.

2. Jamshidi M. Fuzzy control of complex systems. // Soft Computing. 1997. № 1. P.42–56.