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Vykhovanets V.S., Iosenkin V.Ya.

The paper considers the context programming technology based on developing a specialized language for a specific class of applications by concept analysis of problem domain and reflecting its conceptual structure in language concepts. The tools for specifying the semantics of the determined language are described. With program examples, the opportunity of implementing some known methods of semantics description within the framework of context technology is shown.

Zatuliveter Y.S., Toporischev A.V.

For ParSeq programming language built in the tree structures calculus model, the control functions of the global distributed calculations are developed. The features of programming in a mathematically uniform field of computer information are shown with several examples.

Poletykin A.G.

Primary tasks of integrating software are described and standard solutions are presented. Key difficulties and problems arising during the integration of multi-type hard- and software are discussed. The experience of software development for top modular level of A-plant process control system is analyzed.

Levin V.I.

The paper shows the possibility of discontinuous functions simulation with the help of continuous logic operations. It notes that the linear growth of simulation efforts with respect to the number of discontinuities allows to synthesize discontinuous curves as a logical superposition of simple continuous curves.

Ismailov I.G.

The estimators for control parameters of the iteration algorithm are derived in terms of the second member of the equations system that can be useful for direct numerical search of unstable cycles in nonlinear autonomous systems.

Vedeshenkov V.A.

The paper offers a system-level self-diagnosis (SD) method for the components of digital systems with equal number of two type modules (processors and memory). The connected different-type modules are paired in testing and tested subsystems to perform checking and self-diagnosing processes. The method assumes stable multiple faults of a limited number of components. SD organization for such digital systems is developed. It is based on gradual expanding the good modules set. An example of components SD in a 14-module system is included.

Chervonenkis A.Ya.

Molecular biology became recently a new field of pattern recognition methods application. Proteins are formed by sequential connections of amino acids, while the properties of DNA molecule are determined by the sequence of nucleotide pairs. Therefore, the problems of proteins classification, detection of genome fragments and prediction of their functions can be considered as recognizing the words specified in a fixed alphabet. These problems can be considered in terms of sub-problems in a generic problem of protein and genome structure determination and their functions prediction. The paper proposes a new kind of kernel function implemented in Support Vector Machine (SVM) for words recognition learning. The results of the method comparison with other approaches are considered with the examples of two genome fragments identification problems. The work was carried out in the Royal Holloway University of London.

Babushkina N.A., Ostrovskaya L.A., Rykova V.A., et al.

The efficiency of treating experimental tumor (Lewis carcinoma) on mice with an antitumor agent (doxorubicin) in therapeutic and super-small dosage is evaluated by means of mathematical modeling. The 'dosage–effect' bimodal functional dependence is developed. The paper demonstrates that super-small dosage administration results in the change of tumor growth model parameters after the treatment as against its growth without treatment. Various approaches to explaining the mechanisms of super-small dosage action are considered.

Kopnin M.Yu., Kul'ba V.V., Mikrin E.A.

The paper offers a concept of structural-technological standby – a special kind of standby typical for industrial systems. Modified Petri nets language is applied for describing such systems operation. Based on marker stream properties the concepts of cost, flexibility and stability of production process are introduced.

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Kolemaev V.A., Berezhnoy A.E.

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Luzghina O.A.

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Abramyants T.G., Maslov E.P., Rubinovich E.Ya.

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