On Some Computing Problems of Piecewise-Linear Function Approximations Solving by Linear Programming Tools

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In this report some computing problems connected with the piecewise-linear approximations of a given continuous function $f(x) : R^n \to R$ on the base of its values on a given set of the points are discussed. Such problems are often arising in the procedures of economical evaluation of the finance health of the different kinds of enterprises, in the numerical construction of the discriminate functions in pattern recognition applications, and in many other spheres [1,2]. They may be overburden very often by additional requirements playing a role of regularity conditions in the processes of the construction of such function approximations.

The function approximation search may be subjected to some quality merits as well as to some concrete requirements to the structure of the points that determinate the value $f(x)$. For example, such requirements often appear when the values of the function are computed with taking into account a partition of the points according to Delaunay's principle.

In this way authors have succeeded in the eliminating some defects and in generalization of some results from [3,4]. In particular, the approach discussed needs effective strategy of seeking such general linear programming problem solutions that belong to their facets of minimal dimension. In the report some technology of overcoming the specified difficulties is offered. It is partially based on an advanced linear programming tools (see, e. g. [5]).

References

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