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Austrian Center for Didactics of Computer Algebra

Linear Discrete Least-Square Fitting Assisted by CAS

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Abstract:

Least-square approximation is commonly used technique generating the best fitting to given function or to given set of points. We deal with the last case where the task may be reduced to solving a system of linear equations. Besides the polynomial and polynomial-reduced approximations there is considered in details a rational fitting where some traps appear (and for this reason it is called a problematically linearisable fitting). There is discussed the efficient assistance of a computer algebra system to the best fitting tasks, in particular definitions of appropriate functions in DERIVE are given. An especial attention is paid to the back-checking of the alculation process. Instructive examples illustrate the problem. There is also outlined a relation to linear algebra, so the problem can be directly adopted to show the practical meaning of the uniqueness and the singularity of the system of linear algebraic equations.