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LinA.jl : A julia package to compute piecewise linear approximations

Tuesday, October 29, 2024 9:00 AM (30 minutes)

We present new algorithms that can solve the problem of approximating and over/under-estimating univariate functions with piecewise linear (PWL) functions with the minimum number of linear segments given a bound on the pointwise approximation error allowed. These new algorithms can solve the problem in quasi-logarithmic time on a very broad class of errors types. Such algorithms find many applications, for example related to solving certain classes of (mixed-integer) nonlinear and nonconvex programming (MINLP) problems by mixed-integer linear programming (MILP) techniques. An efficient implementation of our algorithms is available as a Julia package that will be presented.

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