Package ‘qpmadr’

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Set qpmad parameters

Usage

qpmadParameters(
    isFactorized = FALSE,
    maxIter = -1,
    tol = 1e-12,
    checkPD = TRUE
)

Arguments

isFactorized  If TRUE then H is a lower Cholesky factor.
maxIter       Maximum number of iterations, if not positive then no limit.
tol           Convergence tolerance.
checkPD       If FALSE then H is assumed to be positive definite and no checks are made.

Value

a list suitable to be used as the pars-argument to solveqp

See Also

solveqp

Examples

qpmadParameters(checkPD = TRUE)
solveqp

Quadratic Programming

Description
Solves
\[
\arg\min_{x} \frac{1}{2} x^{T} H x + h^{T} x
\]
s.t.
\[
lb_i \leq x_i \leq ub_i
\]
\[
Alb_i \leq (Ax)_i \leq Aub_i
\]

Usage

```r
solveqp(
  H, 
  h = NULL, 
  lb = NULL, 
  ub = NULL, 
  A = NULL, 
  Alb = NULL, 
  Aub = NULL, 
  pars = list()
)
```

Arguments

- **H**: Symmetric **positive definite** matrix, n*n. Only the lower triangular part is used.
- **h**: Optional, vector of length n.
- **lb, ub**: Optional, lower/upper bounds of x. Will be repeated n times if length is one.
- **A**: Optional, constraints matrix of dimension p*n, where each row corresponds to a constraint. For equality constraints let corresponding elements in Alb equal those in Aub
- **Alb, Aub**: Optional, lower/upper bounds for Ax.
- **pars**: Optional, qpmad-solver parameters, conveniently set with `qpmadParameters`

Value

At least one of lb, ub or A must be specified. If A has been specified then also at least one of Alb or Aub. Returns a list with elements solution (the solution vector), status (a status code) and message (a human readable message). If status = 0 the algorithm has converged. Possible status codes:

- 0: Ok
- -1: Numerical issue, matrix (probably) not positive definite
• 1: Inconsistent
• 2: Infeasible equality
• 3: Infeasible inequality
• 4: Maximal number of iterations

See Also

qpmadParameters

Examples

```r
## Assume we want to minimize: -(0 5 0) %*% b + 1/2 b^T b
## under the constraints: A^T b >= b0
## with b0 = (-8,2,0)^T
## and
## A = (-3 1 -2)
## ( 0 0 1)
## we can use solveqp as follows:
##
## Dmat <- diag(3)
dvec <- c(0,-5,0)
Amat <- t(matrix(c(-4,-3,0,2,1,0,0,-2,1),3,3))
bvec <- c(-8,2,0)
solveqp(Dmat,dvec,A=Amat,Alb=bvec)
```
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