

?

Scipy

pyOpt

$\min_{x_k, x_{k+1}} f(x)$?

$??$
 A
 B
 C
 A
 $r_{0,1}$
 $r_{0,3}$
 0
 B
 s_3
 $r_{0,3}$
 $r_{3,2}$
 C
 $hidden/.style =$
 $verythick,dashed,polygon/.style =$
 $verythick,black,axis/.style =$
 $-,blue,thick,point/.style =$
 $verythick,black]$
 $r_{0,3}$
 $r_{0,1}$
 $r_{3,0}$
 s_3
 $\bullet B$
 $\bullet A$
 $\bullet C$
 $?C$
 A
 B
 C
 C
 -1
 N_s
 N_s
 $?$
 $81-$
 $80-$
 $algorithm$
 $related$
 $opti-$
 $miza-$
 $tion$
 $solver$
 $related$
 $\bullet N_s$
 $\bullet n_{knots}$
 $\bullet T_p$
 $\bullet T_c$
 \bullet
 $max-$
 $imum$
 $com-$
 $pu-$
 $ta-$
 $tion$
 $timeT_c$
 N_s
 N_{knots}
 $??$
 $first$
 $in-$
 ter
 $last$
 \bullet
 t_0
 T_c
 \bullet
 N_{knots}
 N_s
 $O(n^3)$
 n
 $MAXIT_{first}$
 $MAXIT_{inter}$
 $MAXIT_{last}$
 10^{-3}
 $max-$
 $imum$
 $com-$
 $pu-$
 $ta-$
 $tion$
 $time$
 T
 $max-$
 $imum$
 $com-$
 $pu-$
 $ta-$
 $tion$
 $timeT_c$
 N_s
 N_{knots}
 $??$
 N_s
 N_{knots}
 $max-$
 $imum$
 $com-$
 $pu-$
 $ta-$
 $tion$

N_s
 N_{knots}
 N_{knots}
 N_{max-}
 N_{sym}
 N_{pu-}
 N_{ta-}
 N_{tion}
 $N_{time}T_c$
 $3_{N_{knots_4}/mcttc-tctp.eps}$ *Four internal knots. Average variance between lines is $\times 10^{-2}$*
 $3_{N_{knots_5}/mcttc-tctp.eps}$ *Five internal knots. Average variance between lines is $\times 10^{-2}$*
 $3_{N_{knots_6}/mcttc-tctp.eps}$ *Six internal knots. Average variance between lines is $\times 10^{-2}$*
 $??$
 $??$
 T_p
 T_c
 N_s
 N_{knots}
 v_{max} 1.00m/s
 ω_{max} 5.00rad/s
 q_{inital} $[-0.050.00\pi/2]^T$
 q_{final} $[0.107.00\pi/2]^T$
 u_{final} $[0.000.00]^T$
 u_{final} $[0.000.00]^T$
 O_0 $[0.551.910.31]$
 O_1 $[-0.083.650.32]$
 O_2 $[0.384.650.16]$
 $results/p_{30.482.41140.0011540205.00.13.00.51.010.0}/multirobot-$
 $path.png$ *Robot' s path.*
 $results/p_{30.482.41140.0011540205.00.13.00.51.010.0}/multirobot-$
 $vw.png$ *Robot' sin put.*
 N_{max-}
 N_{sym}
 N_{pu-}
 N_{ta-}
 N_{tion}
 N_{time}
 T_c
 $7.57s$

$6_{N_knots_4/mcttc-tctp.eps}$ *Four internalknots. Average variance between lines is* $\times 10^{-2}$
 $6_{N_knots_5/mcttc-tctp.eps}$ *Five internalknots. Average variance between lines is* $\times 10^{-2}$
 $6_{N_knots_6/mcttc-tctp.eps}$ *Six internalknots. Average variance between lines is* $\times 10^{-2}$
 T_p
 T_c
 N_s
 N_{knots}
 v_{max} 1.00m/s
 ω_{max} 5.00rad/s
 q_{inital} $[-0.050.00\pi/2]^T$
 q_{final} $[0.107.00\pi/2]^T$
 u_{final} $[0.000.00]^T$
 u_{final} $[0.000.00]^T$
 O_0 $[-0.351.360.39]$
 O_1 $[0.212.530.33]$
 O_2 $[-0.324.860.23]$
 O_3 $[0.103.980.31]$
 O_4 $[0.621.250.18]$
 O_5 $[1.173.660.25]$
 $results/p_{61.283.21260.001_15_40_20_5.0_0.1_3.0_0.5_1.0_10.0}/multirobot-path.png$ *Robot' s path.*
 $results/p_{61.283.21260.001_15_40_20_5.0_0.1_3.0_0.5_1.0_10.0}/multirobot-vv.png$ *Robot' sinput.*
 $mat-$
 lum
 $pu-$
 $ta-$
 $tion$
 $time$
 T_c
 $7.76s$
 $O(n^3)$
 η
 N_{knots}
 $O(N)$
 N
 N_s
 N_{knots}
 N_s
 $??$
 MCT/T_c
 ρ_d

$$\begin{array}{l}
 T_c \\
 T_p \\
 N_s \\
 3_{N_k}n\text{ots}_6/\text{tot10.eps} = \\
 10 \\
 3_{N_k}n\text{ots}_6/\text{tot11.eps} = \\
 11 \\
 3_{N_k}n\text{ots}_6/\text{tot12.eps} = \\
 12 \\
 T_c \\
 T_p \\
 N_s \\
 N_s \\
 N_{knots} \\
 T_p \\
 T_c \\
 N_s \\
 \text{??} \\
 \rho_d \\
 \rho_d
 \end{array}$$