Wine Quality Data Set - Red

num_iters = 7000, rate = 0.00017

```
Run#: 1
The seed for random thetas initializing:  2
Thetas initial vector: [0.4359949  0.02592623 0.54966248 0.43532239 0.4203678
0.33033482
 0.20464863 0.61927097 0.29965467 0.26682728 0.62113383]
COST: 1.5544493311117398
Thetas [[ 4.05422357  0.03471476  0.11036213  0.34008322  0.09370466 -0.10092739
  -0.09138409  0.05702028 -0.14431801  0.22516192  0.32391875]]
Last 10 costs [1.55847199 1.55802441 1.55757699 1.55712972 1.55668261 1.55623565
 1.55578884 1.55534218 1.55489568 1.55444933]
================================================================
Run#: 2
The seed for random thetas initializing:  8
Thetas initial vector: [0.8734294  0.96854066 0.86919454 0.53085569 0.23272833
0.0113988
 0.43046882 0.40235136 0.52267467 0.4783918  0.55535647]
COST: 1.41575233772066
Thetas [[ 4.18728698e+00  5.33563840e-01  2.89706281e-01  3.25964501e-01
   1.56065654e-03 -1.86465351e-01  1.11921236e-01 -3.98857386e-02
  -2.38422251e-01  4.87628943e-01  3.44512488e-01]]
Last 10 costs [1.41926948 1.41887816 1.41848697 1.41809591 1.41770498 1.41731419
 1.41692353 1.416533   1.4161426  1.41575234]
================================================================
Run#: 3
The seed for random thetas initializing:  2
Thetas initial vector: [0.4359949  0.02592623 0.54966248 0.43532239 0.4203678
0.33033482
 0.20464863 0.61927097 0.29965467 0.26682728 0.62113383]
COST: 1.5544493311117398
Thetas [[ 4.05422357  0.03471476  0.11036213  0.34008322  0.09370466 -0.10092739
  -0.09138409  0.05702028 -0.14431801  0.22516192  0.32391875]]
Last 10 costs [1.55847199 1.55802441 1.55757699 1.55712972 1.55668261 1.55623565
 1.55578884 1.55534218 1.55489568 1.55444933]
================================================================
Run#: 4
The seed for random thetas initializing:  1
Thetas initial vector: [4.17022005e-01 7.20324493e-01 1.14374817e-04 3.02332573e-
01
 1.46755891e-01 9.23385948e-02 1.86260211e-01 3.45560727e-01
 3.96767474e-01 5.38816734e-01 4.19194514e-01]
COST: 1.5466561458926757
Thetas [[ 4.04845219  0.44547258 -0.11687971  0.09937648  0.01046143 -0.07230723
  -0.00704427  0.03757434 -0.15422515  0.46876666  0.24028156]]
Last 10 costs [1.55064001 1.55019676 1.54975366 1.54931071 1.5488679  1.54842525
 1.54798275 1.5475404  1.5470982  1.54665615]
================================================================
Run#: 5
The seed for random thetas initializing:  10
Thetas initial vector: [0.77132064 0.02075195 0.63364823 0.74880388 0.49850701
0.22479665
 0.19806286 0.76053071 0.16911084 0.08833981 0.68535982]
```

```
COST: 1.4259406354999766
Thetas [[ 4.15622647 -0.02686857  0.22496884  0.500786    0.1226342  -0.17477605
  -0.1256521   0.09658044 -0.23659286  0.16923728  0.349803  ]]
Last 10 costs [1.42950069 1.42910459 1.42870862 1.42831279 1.42791709 1.42752153
 1.4271261  1.42673081 1.42633566 1.42594064]
================================================================
Run#: 6
The seed for random thetas initializing:  9
Thetas initial vector: [0.01037415 0.50187459 0.49577329 0.13382953 0.14211109
0.21855868
 0.41850818 0.24810117 0.08405965 0.34549864 0.16677635]
COST: 1.73106711308541
Thetas [[ 3.92475378  0.40728821  0.05076367  0.16000459  0.034962  -0.02800586
   0.12581669 -0.0900599  -0.27358427  0.2910661   0.17996912]]
Last 10 costs [1.73566762 1.73515575 1.73464406 1.73413255 1.73362121 1.73311004
 1.73259905 1.73208823 1.73157758 1.73106711]
================================================================
Run#: 7
The seed for random thetas initializing:  7
Thetas initial vector: [0.07630829 0.77991879 0.43840923 0.72346518 0.97798951
0.53849587
 0.50112046 0.07205113 0.26843898 0.4998825  0.67923   ]
COST: 1.7630107854106467
Thetas [[ 3.94481032  0.45299839  0.15455433  0.34987611  0.30002078  0.01100387
   0.16988737 -0.22896902 -0.395335    0.50802253  0.29801566]]
Last 10 costs [1.76763913 1.76712417 1.76660938 1.76609477 1.76558033 1.76506607
 1.76455199 1.76403808 1.76352434 1.76301079]
================================================================
Run#: 8
The seed for random thetas initializing:  8
Thetas initial vector: [0.8734294  0.96854066 0.86919454 0.53085569 0.23272833
0.0113988
 0.43046882 0.40235136 0.52267467 0.4783918  0.55535647]
COST: 1.41575233772066
Thetas [[ 4.18728698e+00  5.33563840e-01  2.89706281e-01  3.25964501e-01
   1.56065654e-03 -1.86465351e-01  1.11921236e-01 -3.98857386e-02
  -2.38422251e-01  4.87628943e-01  3.44512488e-01]]
Last 10 costs [1.41926948 1.41887816 1.41848697 1.41809591 1.41770498 1.41731419
 1.41692353 1.416533    1.4161426  1.41575234]
================================================================
Run#: 9
The seed for random thetas initializing:  9
Thetas initial vector: [0.01037415 0.50187459 0.49577329 0.13382953 0.14211109
0.21855868
 0.41850818 0.24810117 0.08405965 0.34549864 0.16677635]
COST: 1.73106711308541
Thetas [[ 3.92475378  0.40728821  0.05076367  0.16000459  0.034962  -0.02800586
   0.12581669 -0.0900599  -0.27358427  0.2910661   0.17996912]]
Last 10 costs [1.73566762 1.73515575 1.73464406 1.73413255 1.73362121 1.73311004
 1.73259905 1.73208823 1.73157758 1.73106711]
================================================================
Run#: 10
The seed for random thetas initializing:  10
Thetas initial vector: [0.77132064 0.02075195 0.63364823 0.74880388 0.49850701
0.22479665
 0.19806286 0.76053071 0.16911084 0.08833981 0.68535982]
COST: 1.4259406354999766
```

Thetas [[4.15622647 -0.02686857 0.22496884 0.500786   0.1226342 -0.17477605
  -0.1256521   0.09658044 -0.23659286 0.16923728 0.349803   ]]
Last 10 costs [1.42950069 1.42910459 1.42870862 1.42831279 1.42791709 1.42752153
 1.4271261   1.42673081 1.42633566 1.42594064]
==