Numeric Example

init

Set the library's directory first!

```
#Load Libraries and functions
setwd("C:/Users/Christina/Desktop/mse-r/MSE-R")
source("mse.R")
```

Import precomputed data

Set the data's directory preferably in the variable 'filename'.

```
filename<-"import/round1m1-1.xls.pre.dat"
```

Load the data in variables with meaningful names

```
x<-import(filename)
g(header,noM,noU,noD,noAttr,distanceMatrices,matchMatrix,mate)%=%x
```

Routines (calculate payoff matrix, inequalities members, dataArray)

```
#Create payoffMatrix
Cx<-Cx(noAttr)
payoffMatrix<-CpayoffMatrix(noM,noU,noD,Cx,distanceMatrices,noAttr)

#Assign payoffMatrix numerical values (set x's)
xval<-c(1,2)
payoffMatrix<-assignpayoffMatrix(payoffMatrix,xval)
```

```
#Create inequality members
ineqmembers<-Cineqmembers(mate)
```

```
#Create Data Array
dataArray<-CdataArray(distanceMatrices,ineqmembers)
```

Maximization

Differential Evolution Method

The default DifferentialEvolution parameters:

```
#Objective function
coefficient1<-1
b<-Cx #Define x1,x2,... values
#obj<-objective(b)

#maximize function
lower <- c(-10, -10)
upper <- -lower
```

option name	default value	
lower,upper	-10,10	two vectors specifying scalar real lower and upper bounds on each parameter to be optimiz
CR	0.5	crossover probability from interval [0,1]
trace	FALSE	Positive integer or logical value indicating whether printing of progress occurs at each itera
itermax	100	the maximum iteration (population generation) allowed
F	0.6	differential weighting factor from interval [0,2]
NP	50	number of population members. Defaults to NA; if the user does not change the value of N
reltol	0.001	relative convergence tolerance. The algorithm stops if it is unable to reduce the value by a
RandomSeed	0	Random Seed to be used for result reproducibility

```
par<-list(lower=lower,upper=upper,NP=50,itermax=100,trace=FALSE,reltol=0.001,CR=0.5,F=0.6,RandomSeed=0)
x<-maximize(par)
g(bestmem,bestval)%=%x
print(bestmem)
```

```
##     par1     par2
## 3.833526 2.929962
```

```
print(bestval)
```

```
## [1] 29966
```

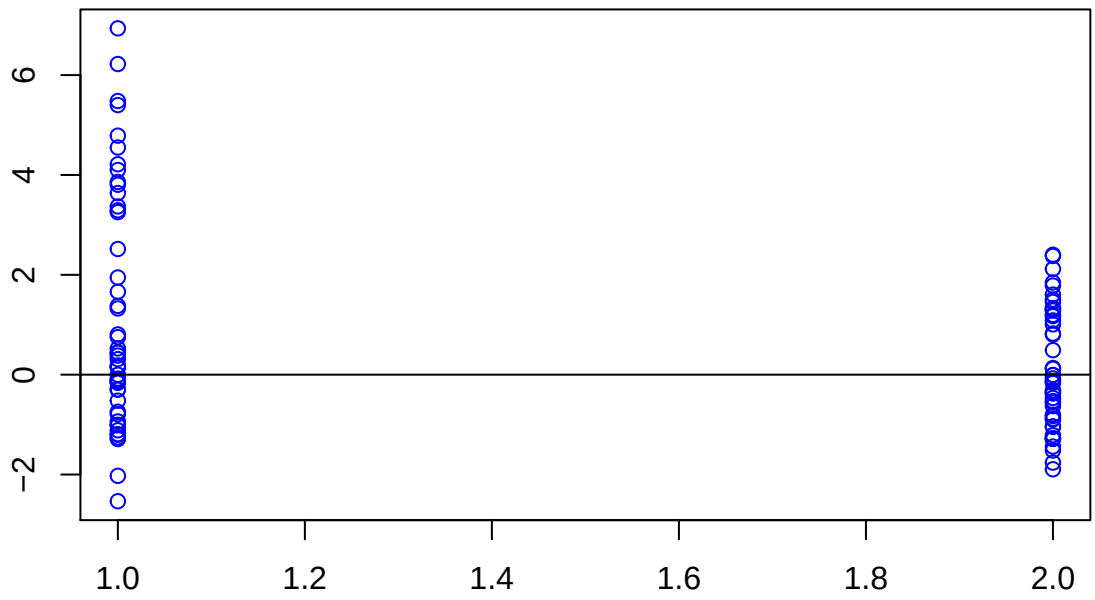
Confidence Intervals

Generate random subsample

```
#Create groupIDs
groupIDs<-groupIDs(ineqmembers)


ssSize<-3

options<-list()
options["progressUpdate"]<-1
options["confidenceLevel"]<-0.95
options["asymptotics"]<-"nests"
options["symmetric"]<-FALSE

numSubsamples<-50
pointEstimate<-as.numeric(bestmem)
b<-Cx[2:3]


lower <- c(-10, -10)
upper <- -lower
par<-list(lower=lower,upper=upper,NP=50,itermax=100,trace=FALSE,reltol=0.001,CR=0.5,F=0.6,RandomSeed=0)


pointIdentifiedCR(ssSize, numSubsamples,pointEstimate,Cx,groupIDs,dataArray,options,par)
```

```
## Iterations completed: 1
## Iterations completed: 2
```

```
## Iterations completed: 3
## Iterations completed: 4
## Iterations completed: 5
## Iterations completed: 6
## Iterations completed: 7
## Iterations completed: 8
## Iterations completed: 9
## Iterations completed: 10
## Iterations completed: 11
## Iterations completed: 12
## Iterations completed: 13
## Iterations completed: 14
## Iterations completed: 15
## Iterations completed: 16
## Iterations completed: 17
## Iterations completed: 18
## Iterations completed: 19
## Iterations completed: 20
## Iterations completed: 21
## Iterations completed: 22
## Iterations completed: 23
## Iterations completed: 24
## Iterations completed: 25
## Iterations completed: 26
## Iterations completed: 27
## Iterations completed: 28
## Iterations completed: 29
## Iterations completed: 30
## Iterations completed: 31
## Iterations completed: 32
## Iterations completed: 33
## Iterations completed: 34
## Iterations completed: 35
## Iterations completed: 36
## Iterations completed: 37
## Iterations completed: 38
## Iterations completed: 39
## Iterations completed: 40
## Iterations completed: 41
## Iterations completed: 42
## Iterations completed: 43
## Iterations completed: 44
## Iterations completed: 45
## Iterations completed: 46
## Iterations completed: 47
## Iterations completed: 48
## Iterations completed: 49
## Iterations completed: 50
```




```
## [[1]]
## [[1]][[1]]
## [1] "Symmetric case"
##
## [[1]][[2]]
## [[1]][[2]][[1]]
## [1] 1.959149 5.707902
##
## [[1]][[2]][[2]]
## [1] 2.205888 3.654036
##
##
##
## [[2]]
## [[2]][[1]]
## [1] "Asymmetric case"
##
## [[2]][[2]]
## [[2]][[2]][[1]]
## [1] 1.705701 4.526242
##
## [[2]][[2]][[2]]
## [1] 2.116908 3.532333
##
##
##
```

```
## [[3]]
##               [,1]         [,2]
##  [1,] -2.025513877 -1.894960581
##  [2,]  0.382106259  1.284719932
##  [3,]  0.438042751  1.329251303
##  [4,]  3.637291359 -1.761343865
##  [5,] -1.114687617 -1.045219911
##  [6,]  6.221799116 -0.166927139
##  [7,]  3.292900989  1.604078165
##  [8,]  5.480710073  0.133537547
##  [9,]  0.166100444 -0.527910326
## [10,] -0.110762867 -0.131051626
## [11,] -0.521114118  0.490865061
## [12,]  3.369115231 -0.883944940
## [13,]  0.751395055 -0.897430049
## [14,]  1.326437282 -0.371603495
## [15,]  4.786428251  0.116693854
## [16,] -0.078467124 -0.128179034
## [17,]  0.182541990  1.845993699
## [18,] -1.289651298 -1.440450561
## [19,] -0.743495368  1.086003213
## [20,] -0.937852328 -0.466532108
## [21,]  0.310806759  1.325791984
## [22,] -0.792778123  0.802255428
## [23,] -1.190102776 -1.283366873
## [24,]  0.448926779  0.823775052
## [25,] -1.205191608 -1.518517453
## [26,]  3.254755615  1.172004814
## [27,] -1.256333408 -1.285305008
## [28,] -1.004726153 -0.804674795
## [29,] -1.013909883 -0.556661765
## [30,] -0.002597596 -0.314408925
## [31,]  4.549544484 -0.327109882
## [32,]  0.525112031  1.456410116
## [33,] -0.163119221 -0.007141734
## [34,] -2.534989102 -1.036054577
## [35,] -0.142228848 -1.211665948
## [36,]  4.100027823  1.503492392
## [37,]  6.936144263  1.007448284
## [38,]  3.804486697  1.198157499
## [39,]  0.140494221 -0.075356834
## [40,]  1.946262408  2.401870951
## [41,] -0.149076528 -1.268713283
## [42,]  2.516940276 -0.831331797
## [43,]  5.399295622 -0.008428538
## [44,]  1.661121376  2.377383480
## [45,] -0.297030090 -0.374759964
## [46,]  0.805742961  1.784556660
## [47,]  1.378595086  2.117205149
## [48,]  4.213854027 -0.629707296
## [49,] -0.300489914 -1.286406144
## [50,]  3.859736726  1.311238998
```