A Verbose smacof

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1 Input

1.1 delta

```
##      [,1]            [,2]            [,3]            [,4]
## [1,]   +0.0000000000   +3.0000000000   +2.0000000000   +3.0000000000
## [2,]   +3.0000000000   +0.0000000000   +1.0000000000   +2.0000000000
## [3,]   +2.0000000000   +1.0000000000   +0.0000000000   +3.0000000000
## [4,]   +3.0000000000   +2.0000000000   +3.0000000000   +0.0000000000
```

1.2 weights

```
##      [,1]            [,2]            [,3]            [,4]
## [1,]   +0.0000000000   +1.0000000000   +1.0000000000   +1.0000000000
## [2,]   +1.0000000000   +0.0000000000   +1.0000000000   +1.0000000000
## [3,]   +1.0000000000   +1.0000000000   +0.0000000000   +1.0000000000
## [4,]   +1.0000000000   +1.0000000000   +1.0000000000   +0.0000000000
```

2 Normalize

2.1 nweights

```
##      [,1]            [,2]            [,3]            [,4]
## [1,]   +0.0000000000   +0.0833333333   +0.0833333333   +0.0833333333
## [2,]   +0.0833333333   +0.0000000000   +0.0833333333   +0.0833333333
## [3,]   +0.0833333333   +0.0833333333   +0.0000000000   +0.0833333333
## [4,]   +0.0833333333   +0.0833333333   +0.0833333333   +0.0000000000
```

2.2 ndelta

```
##      [,1]            [,2]            [,3]            [,4]
## [1,]   +0.0000000000   +1.2247448714   +0.8164965809   +1.2247448714
```

```
## [2,]   +1.2247448714   +0.0000000000   +0.4082482905   +0.8164965809
## [3,]   +0.8164965809   +0.4082482905   +0.0000000000   +1.2247448714
## [4,]   +1.2247448714   +0.8164965809   +1.2247448714   +0.0000000000
```

3 Vmatrix

3.1 vmat

```
##      [,1]            [,2]            [,3]            [,4]
## [1,]   +0.2500000000   -0.0833333333   -0.0833333333   -0.0833333333
## [2,]   -0.0833333333   +0.2500000000   -0.0833333333   -0.0833333333
## [3,]   -0.0833333333   -0.0833333333   +0.2500000000   -0.0833333333
## [4,]   -0.0833333333   -0.0833333333   -0.0833333333   +0.2500000000
```

3.2 vinv

```
##      [,1]            [,2]            [,3]            [,4]
## [1,]   +2.2500000000   -0.7500000000   -0.7500000000   -0.7500000000
## [2,]   -0.7500000000   +2.2500000000   -0.7500000000   -0.7500000000
## [3,]   -0.7500000000   -0.7500000000   +2.2500000000   -0.7500000000
## [4,]   -0.7500000000   -0.7500000000   -0.7500000000   +2.2500000000
```

4 Initialize

4.1 xini

```
##      [,1]            [,2]
## [1,]   +0.6212655007   +0.4082482905
## [2,]   -0.2985956365   -0.4082482905
## [3,]   +0.2985956365   -0.4082482905
## [4,]   -0.6212655007   +0.4082482905
```

4.2 dini

```
##   1               2               3               4
## 1   +0.0000000000   +1.2299638932   +0.8779422008   +1.2425310015
## 2   +1.2299638932   +0.0000000000   +0.5971912731   +0.8779422008
## 3   +0.8779422008   +0.5971912731   +0.0000000000   +1.2299638932
## 4   +1.2425310015   +0.8779422008   +1.2299638932   +0.0000000000
```

4.3 xold

```
##      [,1]            [,2]
## [1,]   +0.5967072366   +0.3921104729
```

```
## [2,]   -0.2867923246   -0.3921104729
## [3,]   +0.2867923246   -0.3921104729
## [4,]   -0.5967072366   +0.3921104729
```

4.4 dold

```
##   1               2               3               4
## 1   +0.0000000000   +1.1813441355   +0.8432376560   +1.1934144733
## 2   +1.1813441355   +0.0000000000   +0.5735846492   +0.8432376560
## 3   +0.8432376560   +0.5735846492   +0.0000000000   +1.1813441355
## 4   +1.1934144733   +0.8432376560   +1.1813441355   +0.0000000000
```

4.5 bold

```
##   1               2               3               4
## 1   +0.2526065660   -0.0863948697   -0.0806906348   -0.0855210615
## 2   -0.0863948697   +0.2263979197   -0.0593124152   -0.0806906348
## 3   -0.0806906348   -0.0593124152   +0.2263979197   -0.0863948697
## 4   -0.0855210615   -0.0806906348   -0.0863948697   +0.2526065660
```

4.6 sold

```
## [1]   +0.0055858539
```

5 First Iteration

5.1 xnew1

```
##      [,1]            [,2]
## [1,]   +0.6101973991   +0.3930958570
## [2,]   -0.2560298680   -0.3930958570
## [3,]   +0.2560298680   -0.3930958570
## [4,]   -0.6101973991   +0.3930958570
```

5.2 dnew1

```
##   1               2               3               4
## 1   +0.0000000000   +1.1698064325   +0.8622830459   +1.2203947983
## 2   +1.1698064325   +0.0000000000   +0.5120597360   +0.8622830459
## 3   +0.8622830459   +0.5120597360   +0.0000000000   +1.1698064325
## 4   +1.2203947983   +0.8622830459   +1.1698064325   +0.0000000000
```

5.3 bnew1

```
##   1              2              3              4
## 1  +0.2497857556  -0.0872469750  -0.0789084072  -0.0836303734
## 2  -0.0872469750  +0.2325942926  -0.0664389103  -0.0789084072
## 3  -0.0789084072  -0.0664389103  +0.2325942926  -0.0872469750
## 4  -0.0836303734  -0.0789084072  -0.0872469750  +0.2497857556
```

5.4 snew1

```
## [1]  +0.0035041674
```

6 Second Iteration

6.1 xnew2

```
##      [,1]           [,2]
## [1,]  +0.6167537315  +0.3918899543
## [2,]  -0.2449488115  -0.3918899543
## [3,]  +0.2449488115  -0.3918899543
## [4,]  -0.6167537315  +0.3918899543
```

6.2 dnew2

```
##   1              2              3              4
## 1  +0.0000000000  +1.1648357042  +0.8674963076  +1.2335074629
## 2  +1.1648357042  +0.0000000000  +0.4898976231  +0.8674963076
## 3  +0.8674963076  +0.4898976231  +0.0000000000  +1.1648357042
## 4  +1.2335074629  +0.8674963076  +1.1648357042  +0.0000000000
```

6.3 bnew2

```
##   1              2              3              4
## 1  +0.2487948391  -0.0876192859  -0.0784342033  -0.0827413499
## 2  -0.0876192859  +0.2354979798  -0.0694444906  -0.0784342033
## 3  -0.0784342033  -0.0694444906  +0.2354979798  -0.0876192859
## 4  -0.0827413499  -0.0784342033  -0.0876192859  +0.2487948391
```

6.4 snew2

```
## [1]  +0.0031872596
```

7 Third Iteration

7.1 xnew3

```
##      [,1]            [,2]
## [1,]   +0.6201781703   +0.3904481658
## [2,]   -0.2410806891   -0.3904481658
## [3,]   +0.2410806891   -0.3904481658
## [4,]   -0.6201781703   +0.3904481658
```

7.2 dnew3

```
##   1               2               3               4
## 1   +0.0000000000   +1.1625686662   +0.8680518309   +1.2403563407
## 2   +1.1625686662   +0.0000000000   +0.4821613781   +0.8680518309
## 3   +0.8680518309   +0.4821613781   +0.0000000000   +1.1625686662
## 4   +1.2403563407   +0.8680518309   +1.1625686662   +0.0000000000
```

7.3 bnew3

```
##   1               2               3               4
## 1   +0.2484586307   -0.0877901457   -0.0783840081   -0.0822844769
## 2   -0.0877901457   +0.2367328763   -0.0705587225   -0.0783840081
## 3   -0.0783840081   -0.0705587225   +0.2367328763   -0.0877901457
## 4   -0.0822844769   -0.0783840081   -0.0877901457   +0.2484586307
```

7.4 snew3

```
## [1]   +0.0031257518
```

8 Fourth Iteration

8.1 xnew4

```
##      [,1]            [,2]
## [1,]   +0.6221618803   +0.3892943614
## [2,]   -0.2397466548   -0.3892943614
## [3,]   +0.2397466548   -0.3892943614
## [4,]   -0.6221618803   +0.3892943614
```

8.2 dnew4

```
##   1               2               3               4
## 1   +0.0000000000   +1.1615019251   +0.8674340344   +1.2443237606
## 2   +1.1615019251   +0.0000000000   +0.4794933096   +0.8674340344
```

```
## 3   +0.8674340344   +0.4794933096   +0.0000000000   +1.1615019251
## 4   +1.2443237606   +0.8674340344   +1.1615019251   +0.0000000000
```

8.3 bnew4

```
##   1               2               3               4
## 1   +0.2483327275   -0.0878707735   -0.0784398341   -0.0820221198
## 2   -0.0878707735   +0.2372619435   -0.0709513359   -0.0784398341
## 3   -0.0784398341   -0.0709513359   +0.2372619435   -0.0878707735
## 4   -0.0820221198   -0.0784398341   -0.0878707735   +0.2483327275
```

8.4 snew4

```
## [1]   +0.0031079624
```

9 Fifth Iteration

9.1 xnew5

```
##      [,1]            [,2]
## [1,]   +0.6233856874   +0.3884626907
## [2,]   -0.2392820211   -0.3884626907
## [3,]   +0.2392820211   -0.3884626907
## [4,]   -0.6233856874   +0.3884626907
```

9.2 dnew5

```
##   1               2               3               4
## 1   +0.0000000000   +1.1609516027   +0.8666883378   +1.2467713749
## 2   +1.1609516027   +0.0000000000   +0.4785640423   +0.8666883378
## 3   +0.8666883378   +0.4785640423   +0.0000000000   +1.1609516027
## 4   +1.2467713749   +0.8666883378   +1.1609516027   +0.0000000000
```

9.3 bnew5

```
##   1               2               3               4
## 1   +0.2482808473   -0.0879124266   -0.0785073235   -0.0818610971
## 2   -0.0879124266   +0.2375088582   -0.0710891080   -0.0785073235
## 3   -0.0785073235   -0.0710891080   +0.2375088582   -0.0879124266
## 4   -0.0818610971   -0.0785073235   -0.0879124266   +0.2482808473
```

9.4 snew5

```
## [1]   +0.0031011765
```