

Subject: Re: optimx and sumscales**From:** Gabor Grothendieck <ggrothendieck@gmail.com>**Date:** 13-04-29 11:15 PM**To:** "Prof J C Nash (U30A)" <nashjc@uottawa.ca>

Regarding the sumscales paper:

1. The first problem (that is quoted from R-help) is a quadratic programming problem so it does not really need nonlinear optimization, quadprog package would do. It is therefore not the best example. Suggest we omit it.

2. The discussion in 4.3 suggests that it would be useful to define a `coef<-optimx` function so that one could do this:

```
ans <- optimx(...)
coef(ans) <- proj(coef(ans))
ans
```

I will look into this.

3. I can't reproduce the first result in 5. I get this. Do you know what is wrong.

```
molerbuild<-function(n){ # Create the moler matrix of order n
+   # A[i,j] = i for i=j, min(i,j)-2 otherwise
+   A <- matrix(0, nrow = n, ncol = n)
+   j <- 1:n
+   for (i in 1:n) {
+     A[i, 1:i] <- pmin(i, 1:i) - 2
+   }
+   A <- A + t(A)
+   diag(A) <- 1:n
+   A
+ }

raynum<-function(x, A){
+   rayquo<-as.numeric((t(x)%*%A)%*%x)
+ }

proj<-function(x) { x/sqrt(crossprod(x)) }

require(BB, quietly=TRUE)
n<-10
x<-rep(1,n)
A<-molerbuild(n)
tmin<-system.time(asprqmin<-spg(x, fn=raynum, project=proj, A=A))[[3]]
iter: 0 f-value: 205 pgrad: 3.089431e-09
Warning message:
In spg(x, fn = raynum, project = proj, A = A) :
  convergence tolerance satisfied at initial parameter values.
tmax<-system.time(asprqmax<-spg(x, fn=raynum, project=proj, A=-A))[[3]]
iter: 0 f-value: -205 pgrad: 0.6324555
cat("maximal eigensolution: Value=",asprqmax$value,"in time ",tmax,"\n")
maximal eigensolution: Value= -205 in time 0.59
print(asprqmax$par)
[1] 0.3162278 0.3162278 0.3162278 0.3162278 0.3162278 0.3162278 0.3162278
[8] 0.3162278 0.3162278 0.3162278
```

I think we need to address the above before proceeding further.

Regards.

On Mon, Apr 29, 2013 at 10:33 PM, Prof J C Nash (U30A)

[<nashjc@uottawa.ca>](mailto:nashjc@uottawa.ca) wrote:

Thanks. Last day in Edmonton. Will try to look as soon as I get home, but changes sound appropriate. I'll see if I can move examples to demo area except for one or two.

Best, JN

On 13-04-29 08:11 PM, Gabor Grothendieck wrote:

Hi, Looked at optimx and removed the obsolete Rd files and added some links among the remaining ones, e.g. summary.optimx is referred to in ?optimx but was not linked.

As mentioned it would be nice to move some of the examples out of ?optimx and only leave one or ones that generate a relatively small amount of output since its quite hard to follow due to the length of the output. The others could be placed in the demo directory or in a vignette.

It passed R CMD check and demo("unitTests") pass on my machine.

Attached the revised version.

Regards.

On Sat, Apr 13, 2013 at 9:34 AM, Gabor Grothendieck

[<ggrothendieck@gmail.com>](mailto:ggrothendieck@gmail.com) wrote:

Hi, Thanks. I will have a look this week. Regards.

On Fri, Apr 12, 2013 at 4:22 PM, Prof J C Nash (U30A) [<nashjc@uottawa.ca>](mailto:nashjc@uottawa.ca) wrote:

Hi,

I've been working with optimx and fixed a couple of minor things (in NEWS).

One annoyance remains, which is a warning that pops up with Rcgminu (I bypass Rcgmin, since there are duplicated tests etc.). However, if folk use Rcgmin without a gradient, they are more or less asking for trouble.

My tests have largely been to actually work with optimx on the book and the sumscale paper, which is now much trimmed. There's one remaining issue in sumscale, which concerns the spg method applied to the Rhelp problem. I actually think we could drop this from the write-up, but I'd sort of like to know why spg doesn't work well on this, and suspect I've mis-applied the

projection. Let me know if you think this is ready for R Journal, and we'll get Ravi to give it a review for copy edit.

I've uploaded optimx to R-forge, but not to CRAN. If you think it's ready, I'll put on CRAN. It's a lot better than it was before, much due to your efforts. Thanks.

Best, J

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