geoRglm Examples with Stan

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September 21, 2013

```
data(s100)
data(p50)
data(b50)
```

```
model_code <- "\ndata {\n  int<lower=1> N;\n  vector[N] X;\n  vector[N] Y;\n  int<lower=0> y
data <- list(N = nrow(p50$coord), X = p50$coord[, 1], Y = p50$coord[, 2], y = p50$data)
fit <- stan(model_code = model_code, data = data, iter = 1000, thin = 1, chains = 1,
    seed = 1, init = function(x) {
        list(beta = 1, sigmasq = 1, phi = 1, zeta = rep(0, nrow(p50$coord)))
    }, nondiag_mass = TRUE)

##
## TRANSLATING MODEL 'model_code' FROM Stan CODE TO C++ CODE NOW.
## COMPILING THE C++ CODE FOR MODEL 'model_code' NOW.
## SAMPLING FOR MODEL 'model_code' NOW (CHAIN 1).
##
Iteration:   1 / 1000 [  0%]  (Adapting)
Iteration: 100 / 1000 [ 10%]  (Adapting)
Iteration: 200 / 1000 [ 20%]  (Adapting)
Iteration: 300 / 1000 [ 30%]  (Adapting)
Iteration: 400 / 1000 [ 40%]  (Adapting)
Iteration: 500 / 1000 [ 50%]  (Adapting)
Iteration: 600 / 1000 [ 60%]  (Sampling)
Iteration: 700 / 1000 [ 70%]  (Sampling)
Iteration: 800 / 1000 [ 80%]  (Sampling)
Iteration: 900 / 1000 [ 90%]  (Sampling)
Iteration: 1000 / 1000 [100%]  (Sampling)

fit

## Inference for Stan model: model_code.
## 1 chains, each with iter=1000; warmup=500; thin=1;
## post-warmup draws per chain=500, total post-warmup draws=500.
```

```
##
##           mean se_mean  sd  2.5%   25%   50%   75% 97.5% n_eff Rhat
## beta       1.2     0.0 0.2   0.8   1.0   1.2   1.3   1.5   500    1
## sigmasq    0.8     0.0 0.2   0.4   0.6   0.7   0.9   1.3   198    1
## phi        0.4     0.0 0.2   0.1   0.3   0.3   0.5   0.9   389    1
## zeta[1]    0.3     0.0 0.5  -0.6   0.0   0.3   0.6   1.1   500    1
## zeta[2]   -0.4     0.0 0.5  -1.5  -0.7  -0.4   0.0   0.5   493    1
## zeta[3]   -0.2     0.0 0.5  -1.1  -0.5  -0.2   0.2   0.8   358    1
## zeta[4]   -0.7     0.0 0.6  -1.9  -1.2  -0.7  -0.3   0.4   208    1
## zeta[5]   -1.0     0.0 0.6  -2.2  -1.3  -1.0  -0.6   0.2   398    1
## zeta[6]   -0.1     0.0 0.5  -1.1  -0.4  -0.1   0.2   0.8   303    1
## zeta[7]   -0.7     0.0 0.6  -2.0  -1.0  -0.6  -0.3   0.4   374    1
## zeta[8]   -0.4     0.0 0.5  -1.5  -0.7  -0.3   0.0   0.6   500    1
## zeta[9]    1.4     0.0 0.3   0.8   1.1   1.4   1.6   2.0   172    1
## zeta[10]   0.6     0.0 0.4  -0.3   0.4   0.6   0.9   1.5   383    1
## zeta[11]   1.5     0.0 0.3   0.9   1.3   1.5   1.7   2.2   253    1
## zeta[12]  -0.7     0.0 0.6  -2.0  -1.1  -0.7  -0.3   0.3   350    1
## zeta[13]  -1.1     0.0 0.6  -2.3  -1.5  -1.1  -0.6   0.1   390    1
## zeta[14]  -0.7     0.0 0.6  -1.9  -1.0  -0.6  -0.4   0.4   390    1
## zeta[15]   0.3     0.0 0.4  -0.6   0.0   0.3   0.6   1.1   311    1
## zeta[16]   0.5     0.0 0.4  -0.3   0.2   0.5   0.8   1.3   188    1
## zeta[17]   1.6     0.0 0.3   1.0   1.4   1.6   1.8   2.2   386    1
## zeta[18]  -0.9     0.0 0.7  -2.2  -1.3  -0.9  -0.5   0.2   500    1
## zeta[19]  -0.3     0.0 0.5  -1.2  -0.6  -0.3   0.0   0.7   500    1
## zeta[20]   0.3     0.0 0.4  -0.6   0.1   0.4   0.6   1.2   500    1
## zeta[21]  -0.1     0.0 0.5  -1.0  -0.4   0.0   0.3   0.8   318    1
## zeta[22]   0.2     0.0 0.5  -0.7  -0.1   0.2   0.5   1.1   500    1
## zeta[23]   0.3     0.0 0.4  -0.6   0.0   0.3   0.6   1.1   442    1
## zeta[24]   0.3     0.0 0.4  -0.6   0.0   0.3   0.6   1.1   297    1
## zeta[25]   1.5     0.0 0.3   0.9   1.3   1.5   1.7   2.2   269    1
## zeta[26]  -0.8     0.0 0.7  -2.3  -1.2  -0.8  -0.4   0.3   344    1
## zeta[27]   0.3     0.0 0.4  -0.5   0.0   0.3   0.6   1.1   500    1
## zeta[28]   0.1     0.0 0.4  -0.8  -0.2   0.1   0.3   0.9   387    1
## zeta[29]   0.8     0.0 0.4   0.0   0.6   0.8   1.1   1.5   184    1
## zeta[30]   0.6     0.0 0.4  -0.2   0.4   0.6   0.9   1.4   500    1
## zeta[31]   0.3     0.0 0.4  -0.6   0.0   0.3   0.6   1.1   338    1
## zeta[32]  -0.3     0.0 0.5  -1.3  -0.7  -0.3   0.1   0.6   303    1
## zeta[33]  -0.1     0.0 0.5  -1.3  -0.4  -0.1   0.2   0.8   500    1
## zeta[34]  -0.4     0.0 0.5  -1.4  -0.7  -0.4   0.0   0.5   500    1
## zeta[35]  -0.6     0.0 0.6  -1.7  -1.0  -0.6  -0.2   0.4   278    1
## zeta[36]   0.3     0.0 0.5  -0.6   0.0   0.3   0.6   1.2   427    1
## zeta[37]  -0.4     0.0 0.5  -1.4  -0.6  -0.4   0.0   0.6   434    1
## zeta[38]  -0.1     0.0 0.5  -1.1  -0.4  -0.1   0.2   0.9   445    1
## zeta[39]  -0.7     0.0 0.6  -1.8  -1.0  -0.7  -0.3   0.4   395    1
## zeta[40]  -0.3     0.0 0.5  -1.4  -0.7  -0.4   0.0   0.7   500    1
```

```
## zeta[41]  -0.4     0.0 0.5  -1.3  -0.7  -0.4  -0.1   0.5   326    1
## zeta[42]   0.7     0.0 0.4  -0.2   0.5   0.7   1.0   1.4   500    1
## zeta[43]  -0.7     0.0 0.6  -1.7  -1.0  -0.6  -0.3   0.4   242    1
## zeta[44]  -0.4     0.0 0.5  -1.6  -0.8  -0.4   0.0   0.6   303    1
## zeta[45]   0.4     0.0 0.4  -0.3   0.1   0.5   0.8   1.2   378    1
## zeta[46]   1.7     0.0 0.3   1.0   1.5   1.7   1.9   2.3   489    1
## zeta[47]  -0.9     0.0 0.6  -2.4  -1.3  -0.9  -0.5   0.1   366    1
## zeta[48]  -0.7     0.0 0.6  -2.0  -1.0  -0.7  -0.2   0.4   500    1
## zeta[49]  -0.4     0.0 0.6  -1.6  -0.8  -0.4   0.0   0.6   500    1
## zeta[50]   0.2     0.0 0.5  -0.7   0.0   0.3   0.6   1.1   327    1
## lp__     177.3     0.6 6.1 165.2 173.4 177.3 181.5 188.7   100    1
##
## Samples were drawn using NUTS(nondiag) at Sat Sep 21 20:29:17 2013.
## For each parameter, n_eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor on split chains (at
## convergence, Rhat=1).
```