

Assignment 11

1. Read information on modules prob and gibbs in directory libs.
2. Repeat the assignment on the mean and variance of a pseudo-random normal sample using `gen_normal()` function from module prob. Possibly, generalize to multiple dimensions.
3. Using model prob, generate data for a model:
$$y=h+sire+e, h\sim UN(50,60), sire\sim N(0,25), e\sim N(0,400)$$
for 10 herds and 50 sires. Generate 1000 records. Assign records to herds and sires randomly. Analyze.
4. Read the documentation on gibbs sampling programs in subdirectories gibbs, gibbs1, gibbs2 and gibbs3.
5. Run `gibbsf90` and `gibbs2f90` with a single trait example `exmr99s1` (1 traits) and `exmr99s` (3 traits) for 100 rounds. Compare speed.
6. Run `gibbs1f90` for a 3-trait example; use the number of samples 1000 and burn-in 200. Run program `postgibbsf90`. For graphical output, `postgibbsf90` requires a plotting package GNUPLOT and X Windows (e.g., as provided by X emulation packages or by free VNC).

Attention: For reasonable results, usually the number of samples needs to be in the range

Optional

7. Simplify `gibbsf90` by updating the residual variance only every 10th round..Compare CPU times, approximate burn in, and the number of effective samples to an original version (e.g., using `exmr99s1`).