

speedtest

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2017-10-22

Setup

```
library(dynamichazard); library(microbenchmark)

## Loading required package: survival

sim_func <- function(n, p){
  func <- asNamespace("dynamichazard")$test_sim_func_logit
  set.seed(101)
  t_max <- 30L
  func(n_series = n, n_vars = p, t_max = t_max, x_range = 1, x_mean = 0,
       beta_start = runif(p, -1.5, 1.5),
       intercept_start = -3, sds = c(.1, rep(.25, p)),
       tstart_sampl_func = function(t0, t_max)
         max(0, runif(1, -t_max, t_max - 1L)),
       lambda = 1 / 10)
}

get_rune_time_summary <- function(n, p){
  sims <- sim_func(n, p)

  out <- summary(microbenchmark(
    EKF_one_correction_step =
      suppressMessages(ddhazard(
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1e6, p + 1L),
        Q = diag(1e-1, p + 1L))),
    EKF_more_correction_step =
      suppressMessages(ddhazard(
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1, p + 1L),
        Q = diag(1e-1, p + 1L),
        control = list(NR_eps = 1e-3))),
    SMA = suppressMessages(ddhazard(
```

```

    formula = Surv(tstart, tstop, event) ~ . - id,
    data = sims$res,
    model = "logit",
    id = sims$res$id,
    by = 1L,
    max_T = 30L,
    Q_0 = diag(1e6, p + 1L),
    Q = diag(1e-1, p + 1L),
    control = list(method = "SMA"))),

GMA = suppressMessages(ddhazard(
  formula = Surv(tstart, tstop, event) ~ . - id,
  data = sims$res,
  model = "logit",
  id = sims$res$id,
  by = 1L,
  max_T = 30L,
  Q_0 = diag(1, p + 1L),
  Q = diag(1e-1, p + 1L),
  control = list(method = "GMA"))),

UKF = suppressMessages(ddhazard(
  formula = Surv(tstart, tstop, event) ~ . - id,
  data = sims$res,
  model = "logit",
  id = sims$res$id,
  by = 1L,
  max_T = 30L,
  Q_0 = diag(1, p + 1L),
  Q = diag(1e-1, p + 1L),
  control = list(method = "UKF"))),

  times = 5
))

cat("(n, p) = (", n, ", ", p, ")",
    ". Units is ", sQuote(attr(out, "unit")), "\n", sep = "")

print(out[, c("expr", "lq", "median", "uq")], row.names = FALSE)

cat("\n\n")

invisible()
}

```

Test

```

grid_vals <- expand.grid(
  n = c(250, 1000, 10000),
  p = c(5, 10, 15))

```

```
invisible(
  mapply(get_rune_time_summary, n = grid_vals$n, p = grid_vals$p))
```

```
## (n, p) = (250, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 62.3   65.5 65.6
## EKF_more_correction_step 108.0  108.1 109.5
##           SMA 171.1   172.3 172.3
##           GMA 172.8   177.3 177.8
##           UKF 198.4   198.6 202.4
##
##
## (n, p) = (1000, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 180     184 208
## EKF_more_correction_step 505     506 518
##           SMA 495     499 509
##           GMA 336     340 340
##           UKF 412     421 426
##
##
## (n, p) = (10000, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 386     407 485
## EKF_more_correction_step 869     884 887
##           SMA 2029    2036 2074
##           GMA 657     746 747
##           UKF 2112    2119 2163
##
##
## (n, p) = (250, 10). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 117     121 136
## EKF_more_correction_step 249     259 260
##           SMA 409     409 416
##           GMA 372     376 387
##           UKF 550     557 563
##
##
## (n, p) = (1000, 10). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 145     150 155
## EKF_more_correction_step 299     312 322
##           SMA 497     530 560
##           GMA 262     264 270
##           UKF 607     613 630
##
##
## (n, p) = (10000, 10). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 588     606 606
## EKF_more_correction_step 967     979 1094
##           SMA 2953    3254 3265
##           GMA 792     808 877
```

```

##           UKF 3458   3590 3598
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##           expr   lq median   uq
##   EKF_one_correction_step 335   336 338
##   EKF_more_correction_step 365   373 382
##           SMA 1050   1073 1076
##           GMA 496    522 537
##           UKF 1297   1298 1340
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##           expr   lq median   uq
##   EKF_one_correction_step 235   238 247
##   EKF_more_correction_step 460   471 477
##           SMA 1118   1271 1272
##           GMA 459    477 482
##           UKF 1197   1198 1234
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##           expr   lq median   uq
##   EKF_one_correction_step 589    614 619
##   EKF_more_correction_step 1084   1175 1249
##           SMA 4250   4562 4838
##           GMA 886    972 989
##           UKF 4490   4834 4906

```

Session info

- R version 3.4.1 (2017-06-30), x86_64-w64-mingw32
- Locale: LC_COLLATE=English_United States.1252, LC_CTYPE=C, LC_MONETARY=English_United States.1252, LC_NUMERIC=C, LC_TIME=English_United States.1252
- Running under: Windows 10 x64 (build 15063)
- Matrix products: default
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: dynamichazard 0.4.0, microbenchmark 1.4-2.1, survival 2.41-3
- Loaded via a namespace (and not attached): backports 1.1.0, boot 1.3-19, colorspace 1.3-2, compiler 3.4.1, data.table 1.10.4-2, digest 0.6.12, evaluate 0.10.1, ggplot2 2.2.1, grid 3.4.1, gtable 0.2.0, htmltools 0.3.6, knitr 1.17, lattice 0.20-35, lazyeval 0.2.0, magrittr 1.5, Matrix 1.2-10, munsell 0.4.3, plyr 1.8.4, Rcpp 0.12.13, rlang 0.1.2, rmarkdown 1.6, rprojroot 1.2, scales 0.5.0, splines 3.4.1, stringi 1.1.5, stringr 1.2.0, tibble 1.3.4, tools 3.4.1, yaml 2.1.14