

speedtest

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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 = 1
))

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))

## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

## (n, p) = (250, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step  74.8   74.8  74.8
## EKF_more_correction_step 150.9  150.9 150.9
##           SMA 178.6  178.6 178.6
##           GMA 291.4  291.4 291.4
##           UKF 316.5  316.5 316.5

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## (n, p) = (1000, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step  219    219 219
## EKF_more_correction_step  710    710 710
##           SMA 625    625 625
##           GMA 398    398 398
##           UKF 508    508 508

## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
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## (n, p) = (10000, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step  484    484 484
## EKF_more_correction_step 1226   1226 1226
##           SMA 2298   2298 2298
```

```

##          GMA  921    921  921
##          UKF 2511   2511 2511

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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

## (n, p) = (250, 10). Units is 'milliseconds'
##          expr  lq median  uq
## EKF_one_correction_step 120    120 120
## EKF_more_correction_step 263    263 263
##          SMA 448    448 448
##          GMA 508    508 508
##          UKF 883    883 883

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## (n, p) = (1000, 10). Units is 'milliseconds'
##          expr  lq median  uq
## EKF_one_correction_step 144    144 144
## EKF_more_correction_step 329    329 329
##          SMA 509    509 509
##          GMA 251    251 251
##          UKF 774    774 774

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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

## (n, p) = (10000, 10). Units is 'milliseconds'
##          expr  lq median  uq
## EKF_one_correction_step 555    555 555
## EKF_more_correction_step 1312   1312 1312
##          SMA 3088   3088 3088
##          GMA 1097   1097 1097

```

```

##                                UKF 4349   4349 4349

## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
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## (n, p) = (250, 15). Units is 'milliseconds'
##              expr    lq median    uq
## EKF_one_correction_step 289    289 289
## EKF_more_correction_step 333    333 333
##              SMA    912    912 912
##              GMA    554    554 554
##              UKF   2138    2138 2138

## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
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## (n, p) = (1000, 15). Units is 'milliseconds'
##              expr    lq median    uq
## EKF_one_correction_step 245    245 245
## EKF_more_correction_step 473    473 473
##              SMA    936    936 936
##              GMA    387    387 387
##              UKF   1690    1690 1690

## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

## (n, p) = (10000, 15). Units is 'milliseconds'
##              expr    lq median    uq
## EKF_one_correction_step 482    482 482
## EKF_more_correction_step 1217   1217 1217
##              SMA   4264   4264 4264
##              GMA   1171   1171 1171
##              UKF   5163   5163 5163

```

Session info

- R version 3.5.1 (2018-07-02), 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 17134)
- Matrix products: default
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: dynamichazard 0.6.1, microbenchmark 1.4-6, survival 2.42-3
- Loaded via a namespace (and not attached): backports 1.1.2, boot 1.3-20, compiler 3.5.1, digest 0.6.15, evaluate 0.10.1, grid 3.5.1, htmltools 0.3.6, knitr 1.20, lattice 0.20-35, magrittr 1.5, Matrix 1.2-14, parallel 3.5.1, Rcpp 1.0.0, rmarkdown 1.10, rprojroot 1.3-2, splines 3.5.1, stringi 1.1.7, stringr 1.3.0, tools 3.5.1, yaml 2.1.18