

Portfolio 3 - Multivariate KDE with RcppArmadillo

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Multivariate Kernel Density Estimation (KDE)

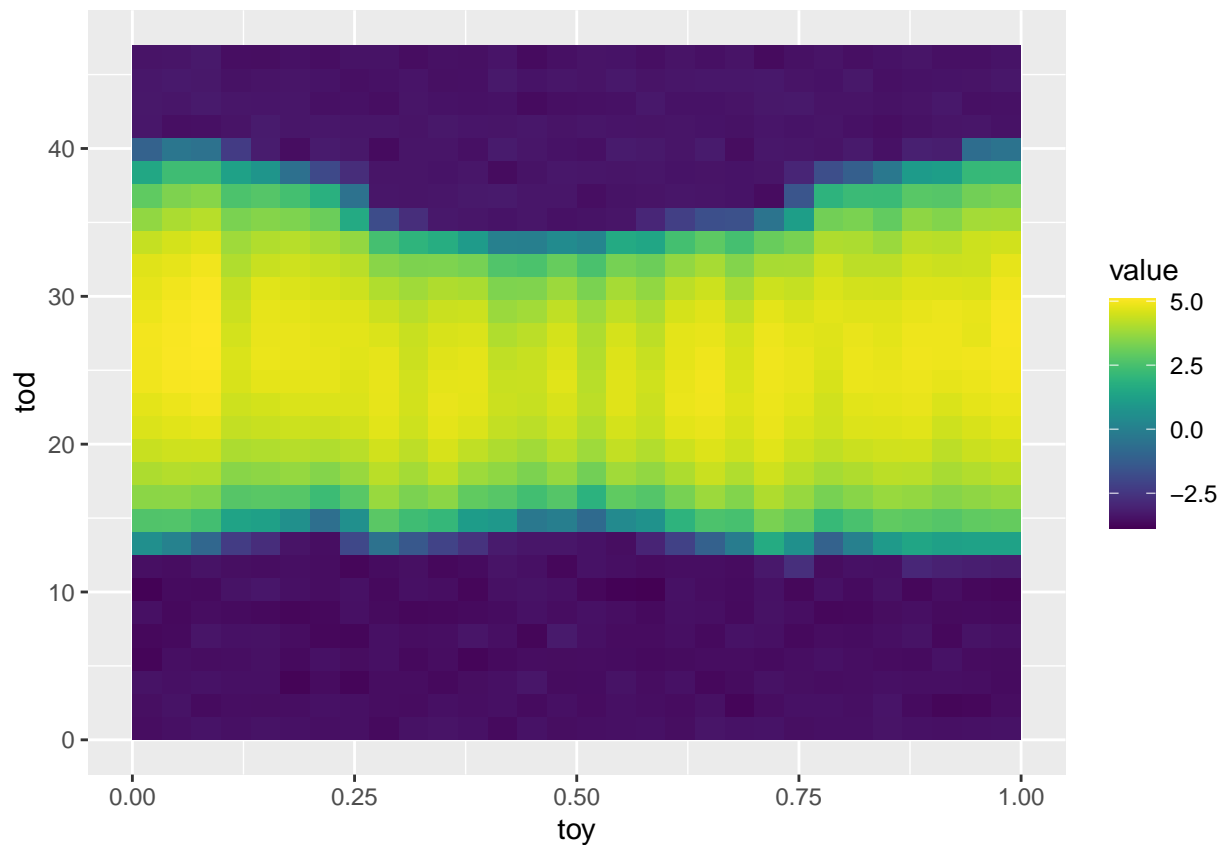
```
load("solarAU.RData")
head(solarAU)

##           prod           toy tod
## 8832 0.019 0.000000e+00    0
## 8833 0.032 5.708088e-05    1
## 8834 0.020 1.141618e-04    2
## 8835 0.038 1.712427e-04    3
## 8836 0.036 2.283235e-04    4
## 8837 0.012 2.854044e-04    5

solarAU$logprod <- log(solarAU$prod+0.01)
library(ggplot2)
library(viridis)

## Loading required package: viridisLite

ggplot(solarAU,
  aes(x = toy, y = tod, z = logprod)) +
  stat_summary_2d() +
  scale_fill_gradientn(colours = viridis(50))
```



```
X <- with(solarAU, cbind(1, tod, tod^2, toy, toy^2))
head(X)
```

```
##      tod      toy
## [1,] 1    0    0 0.000000e+00 0.000000e+00
## [2,] 1    1    1 5.708088e-05 3.258227e-09
## [3,] 1    2    4 1.141618e-04 1.303291e-08
## [4,] 1    3    9 1.712427e-04 2.932405e-08
## [5,] 1    4   16 2.283235e-04 5.213164e-08
## [6,] 1    5   25 2.854044e-04 8.145568e-08
```

```
library(Rcpp)
```