

Meshgrid Arrays in R

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Searched Terms

- r expand.grid meshed array to matrix
- r meshgrid
- r array to matrix
- r reshape array to matrix

Set-up

```
library(knitr)
library(kableExtra)
getwd()
# file name
st_file_name = 'fs_meshr'
# Generate R File
purl(paste0(st_file_name, ".Rmd"), output=paste0(st_file_name, ".R"), documentation = 2)
# Generate PDF and HTML
# rmarkdown::render("C:/Users/fan/R4Econ/support/array/fs_meshr.Rmd", "pdf_document")
# rmarkdown::render("C:/Users/fan/R4Econ/support/array/fs_meshr.Rmd", "html_document")
```

Define Two Arrays and Mesh Them

Given two arrays, mesh the two arrays together.

```
# use expand.grid to generate all combinations of two arrays

it_ar_A = 5
it_ar_alpha = 10

ar_A = seq(-2, 2, length.out=it_ar_A)
ar_alpha = seq(0.1, 0.9, length.out=it_ar_alpha)

mt_A_alpha = expand.grid(A = ar_A, alpha = ar_alpha)

mt_A_meshed = mt_A_alpha[,1]
dim(mt_A_meshed) = c(it_ar_A, it_ar_alpha)

mt_alpha_meshed = mt_A_alpha[,2]
dim(mt_alpha_meshed) = c(it_ar_A, it_ar_alpha)

# display
kable(mt_A_meshed) %>%
  kable_styling(bootstrap_options = c("striped", "hover", "condensed", "responsive"))
```

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 | -2 |
| -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

```
kable(mt_alpha_meshed) %>%
  kable_styling(bootstrap_options = c("striped", "hover", "condensed", "responsive"))
```

| | | | | | | | | | |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 0.1 | 0.1888889 | 0.2777778 | 0.3666667 | 0.4555556 | 0.5444444 | 0.6333333 | 0.7222222 | 0.8111111 | 0.9 |
| 0.1 | 0.1888889 | 0.2777778 | 0.3666667 | 0.4555556 | 0.5444444 | 0.6333333 | 0.7222222 | 0.8111111 | 0.9 |
| 0.1 | 0.1888889 | 0.2777778 | 0.3666667 | 0.4555556 | 0.5444444 | 0.6333333 | 0.7222222 | 0.8111111 | 0.9 |
| 0.1 | 0.1888889 | 0.2777778 | 0.3666667 | 0.4555556 | 0.5444444 | 0.6333333 | 0.7222222 | 0.8111111 | 0.9 |
| 0.1 | 0.1888889 | 0.2777778 | 0.3666667 | 0.4555556 | 0.5444444 | 0.6333333 | 0.7222222 | 0.8111111 | 0.9 |

Two Identical Arrays, Mesh to Generate Square

Two Identical Arrays, individual attributes, each column is an individual for a matrix, and each row is also an individual

```
# use expand.grid to generate all combinations of two arrays
```

```
it_ar_A = 5
```

```
ar_A = seq(-2, 2, length.out=it_ar_A)
mt_A_A = expand.grid(Arow = ar_A, Arow = ar_A)
mt_Arow = mt_A_A[,1]
dim(mt_Arow) = c(it_ar_A, it_ar_A)
mt_Acol = mt_A_A[,2]
dim(mt_Acol) = c(it_ar_A, it_ar_A)
```

```
# display
```

```
kable(mt_Arow) %>%
  kable_styling(bootstrap_options = c("striped", "hover", "condensed", "responsive"))
```

| | | | | |
|----|----|----|----|----|
| -2 | -2 | -2 | -2 | -2 |
| -1 | -1 | -1 | -1 | -1 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 | 2 |

```
kable(mt_Acol) %>%
  kable_styling(bootstrap_options = c("striped", "hover", "condensed", "responsive"))
```

| | | | | |
|----|----|---|---|---|
| -2 | -1 | 0 | 1 | 2 |
| -2 | -1 | 0 | 1 | 2 |
| -2 | -1 | 0 | 1 | 2 |
| -2 | -1 | 0 | 1 | 2 |
| -2 | -1 | 0 | 1 | 2 |