

# Package ‘snem’

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**Type** Package

**Title** EM Algorithm for Multivariate Skew-Normal Distribution with Overparametrization

**Version** 0.1.1

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**Imports** mvtnorm

**Description** Efficient estimation of multivariate skew-normal distribution in closed form.

**License** GPL (>= 2)

**Encoding** UTF-8

**LazyData** true

**Suggests** sn

**RoxygenNote** 7.0.2

**NeedsCompilation** no

**Repository** CRAN

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`snem`*EM algorithm for multivariate skew normal distribution.*

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### Description

EM algorithm in closed form.

### Usage

```
snem(  
  x,  
  eps = 0.9,  
  iter.eps = 10^-6,  
  stop.rule = c("parameter", "log-likelihood")  
)
```

### Arguments

<code>x</code>	A data matrix. Each row is an observation vector.
<code>eps</code>	Weight parameter with $0 \leq eps < 1$ . Default is 0.9.
<code>iter.eps</code>	Convergence threshold. Default is $10^{-6}$ .
<code>stop.rule</code>	"parameter": The difference of the parameter is used as a stopping rule. "log-likelihood" The difference of the log-likelihood is used as a stopping rule.

### Details

The parameter `eps` is a tuning parameter which ensures that an initial covariance matrix is positive semi-definite.

### Value

Location parameter (`mu`), covariance matrix (`omega`), skewness parameter (`delta`), and another expression of skewness parameter (`lambda`).

### References

Abe, T., Fujisawa, H., and Kawashima, T. (2019) *EM algorithm using overparametrization for multivariate skew-normal distribution, in preparation.*

### Examples

```
library(sn)  
data(ais, package="sn")  
x <- ais[c("BMI")]  
snem(x, stop.rule = "log-likelihood")
```

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