

spINAR: : CHEAT SHEET



Installation

Development version

```
devtools::install_github("Mfaymon/spINAR")
library(spINAR)
```

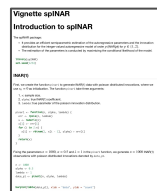
What is spINAR?

The spINAR package was generated to work with count data for Autoregressive Integer Models.

Vignettes

tutorial for spINAR

```
help(package = "spINAR")
```



Arguments

- `n` : simple size
- `p` : model order
- `alpha` : INAR coefficient(s)
- `pmf`: probability mass function of the
- `x` : data

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Main Functions

Simulation INAR(p)

spinar_sim() simulate INAR data given `n`, `p`, `alpha` and `pmf`

output: simulated INAR data

```
spinar_sim(n, p, alpha, pmf, prerun)
```

Estimation INAR(p)

spinar_est() estimates semi-parametrically an INAR model of given `x` and `p`

output: estimated parameters `alpha` and `pmf`

```
spinar_est(x, p)
```

Bootstrap INAR(p)

spinar_boot() performs the semiparametric INAR bootstrap procedure given `x`, `p` and for a given number of replications (`B`)

output: bootstrap estimated parameters, `alpha` and `pmf`

```
inar_sp_boot(x, p, B)
```

Fully parametric estimation of INAR(p)

spinar_est_param() estimates parametrically (moment based for now and maximum likelihood later) an INAR model, for a given `x`, `p`, a estimation type (`type`) a parametric family of distribution (`distr`).

output: estimated parameters: `alpha`, parameters of input distribution

```
spinar_est_param(x, p, type, distr)
```

estimation
type

Poisson
Geometric
Neg. Binomial

Penalized semiparametric estimation of INAR(p)

spinar_penal() estimates semiparametrically and penalized an INAR model of given order `p` on `x` and for a given penalization parameters (`penal1`, `penal2`)

output: estimated parameters (`alpha`, `pmf`)

```
spinar_penal(x, p, penal1, penal2)
```

spinar_penal_val() estimates semiparametrically and penalized an INAR model for a given `p`, `x`, and allows for validation of both or only one penalization parameter, which can be adjusted by the number of folds and `init1` `init2`.

output: estimated parameters(`alpha`, `pmf`) and validated penalization parameter(s)

```
spinar_penal_val(x, p, valid,
                  penal1, penal2,
                  over, folds,
                  init1, init2)
```

initial values for the penalized
parameters

Additional functions

R script

`helper`

`llspinar`

`llspinar-penal`

description

Contains the functions `constrmat` and `.constrvec`

Contains a list of the two semiparametric log-likelihood functions

Contains a list of the two penalized semiparametric log likelihood functions