
PLSLib

Release 0.1

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May 09, 2023

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PLSLib is a Python and R library implementing the various algorithms detailed in the book *Partial LeastSquares Regression and Related Dimension Reduction Methods* by R. Dennis Cook and Liliana Forzani, available [here](#).

Nonlinear Iterative Partial Least Squares [REFERENCE HERE].

class NIPALS.nipals.nipals

Orthogonal weights: $W_q^T W_q = I_q$

Envelope connection: $\text{span}(W_q) = \mathcal{E}_{\Sigma_X}(\mathcal{B})$, the Σ_X -envelope of \mathcal{B} :
 $\text{span}(\beta)$.

Score matrix S_d : These are traditional computational intermediaries, although they are not needed in the computation of $\hat{\beta}_{\text{npls}}$.

Algorithm N: This is an instance of Algorithm N discussed in §1.5.3.

PLS1 v. PLS2: Algorithm is applicable for PLS1 or PLS2 fits; See §3.8.

NIPALS.nipals.nipals.**fit**(*self*, *X*, *Y*, *q*, *version*='sample')

Fit this model to the training data *X*, *Y* using *q* dimensions.

Parameters

- **X** (*array-like*) – Predictor of shape (*n_samples*, *p_features*)
- **Y** (*array-like*) – Response of shape (*n_samples*, *r_features*)
- **q** (*int*) – Value between 1 and *p_features*. The number of projections used.
- **version** (*str*) – either ‘sample’ or ‘population’, defaults to ‘sample’

Returns

Nothing.

NIPALS.nipals.nipals.**transform**(*self*, *X*)

Transform data using the NIPALS algorithm. Must run `NIPALS.nipals.nipals.fit()` before running this function.

Parameters

X (*array-like*) – Predictor of shape (*n_samples*, *p_features*)

Returns

The *W* and β transformed data, respectively.

Return type

tuple(array-like, array-like)

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