

# Package: OSIRCR (via r-universe)

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**Type** Package

**Title** Cosine Regression-Based Online Sliced Inverse Regression Algorithm

**Version** 0.2.9

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**Description** In high-dimensional streaming data analysis, extracting core periodic features under real-time constraints remains challenging. Traditional dimension reduction methods fail to adapt to incremental data and yield low accuracy due to irrelevant variables. This package provides the Online Sliced Inverse Regression framework for cosine regression with high-dimensional irrelevant variables. It integrates subspace extraction of sliced inverse regression and incremental learning of online algorithms to efficiently handle periodic streaming data. Cai, Z., Li, R., & Zhu, L. (2020) <[doi:10.48550/arXiv.2002.02795](https://doi.org/10.48550/arXiv.2002.02795)>.

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**Encoding** UTF-8

**Depends** R (>= 3.5.0)

**Imports** stats

**NeedsCompilation** no

**LazyData** true

**RoxygenNote** 7.3.3

**Language** en-US

**Repository** <https://guangbaog.r-universe.dev>

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BSIR	<i>Batch SIR method. This method can estimate batch dimension reduction.</i>
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### Description

Batch SIR method. This method can estimate batch dimension reduction.

### Usage

```
BSIR(data)
```

```
bsir_batch_data
```

### Arguments

`data` is a highly correlated data set

### Format

A data frame

### Value

Estimated central subspace

### Functions

- `bsir_batch_data`: `bsir_batch_data` Example data for BSIR

### Examples

```
BSIR(data=bsir_batch_data)
```

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OPCA	<i>Online PCA method. This method can estimate online eigen space.</i>
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**Description**

Online PCA method. This method can estimate online eigen space.

**Usage**

```
OPCA(data, m = 3)
```

```
opca_online_data
```

**Arguments**

data	is a highly correlated data set
m	is the number of principal component

**Format**

A data frame

**Value**

Ahat, Dhat

**Functions**

- opca\_online\_data: opca\_online\_data Example data for OPCA

**Examples**

```
OPCA(data=opca_online_data,m=3)
```

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OSIRgd	<i>OSIR Gradient Descent method. This method can estimate online dimension reduction.</i>
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**Description**

OSIR Gradient Descent method. This method can estimate online dimension reduction.

**Usage**

```
OSIRgd(data)
```

```
osir_gd_data
```

**Arguments**

`data` is a highly correlated data set

**Format**

A data frame

**Value**

Estimated parameters and convergence result

**Functions**

- `osir_gd_data`: `osir_gd_data` Example data for OSIRgd

**Examples**

```
OSIRgd(data=osir_gd_data)
```

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OSIRpd

*OSIR Perturbation method. This method can estimate online dimension reduction.*

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**Description**

OSIR Perturbation method. This method can estimate online dimension reduction.

**Usage**

```
OSIRpd(data)
```

```
osir_pd_data
```

**Arguments**

`data` is a highly correlated data set

**Format**

A data frame

**Value**

Estimated directions and error

**Functions**

- `osir_pd_data`: `osir_pd_data` Example data for OSIRpd

**Examples**

```
OSIRpd(data=osir_pd_data)
```

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