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# **sparseklearn**

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## Contents:

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<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Overview . . . . .	1
1.2	Installation . . . . .	1
1.3	Usage . . . . .	1
<b>2</b>	<b>The Sparsifier Object</b>	<b>3</b>
<b>3</b>	<b>Gaussian Mixture Models</b>	<b>5</b>
<b>4</b>	<b>K-Means</b>	<b>7</b>
<b>5</b>	<b>Indices and tables</b>	<b>9</b>



### 1.1 Overview

**Sparselearn** is a Python package of machine learning algorithms based on dimensionality reduction via random projections. By working on compressed data, **Sparselearn** performs standard machine learning tasks more efficiently and uses less memory. Its algorithms are all *one-pass*, meaning that they only need to access the raw data once. **Sparselearn** implements algorithms described in our papers on sparsified [k-means and PCA](#) and on [Gaussian mixtures](#).

### 1.2 Installation

It is highly recommended that you install this package in a [virtual environment](#). With the virtual environment active, build the C extensions and install the package:

```
python setup.py build_ext --inplace
pip install .
```

To test the installation, run the unit tests:

```
pytest
```

### 1.3 Usage

See `examples/` for notebooks of usage examples. You will need Jupyterlab:

```
cd examples
pip install -r requirements.txt
jupyter lab
```



## CHAPTER 2

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### The Sparsifier Object

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## CHAPTER 3

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### Gaussian Mixture Models

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## CHAPTER 4

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### K-Means

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## CHAPTER 5

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### Indices and tables

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- `genindex`
- `modindex`
- `search`