

SOM_Algorithm_p5

November 1, 2025

Read a dataset and perform unsupervised learning using SOM algorithm.

```
[2]: !pip install minisom
from minisom import MiniSom
from sklearn.datasets import load_iris
from sklearn.preprocessing import MinMaxScaler
import numpy as np

# Load dataset (unsupervised: only features)
X = load_iris().data
X = MinMaxScaler().fit_transform(X) # normalize data

# Initialize and train SOM
som = MiniSom(x=5, y=5, input_len=X.shape[1], sigma=1.0, learning_rate=0.5)
som.random_weights_init(X)
som.train_random(X, num_iteration=100)

# Map data points to clusters
win_map = np.array([som.winner(x) for x in X])
print("Sample SOM neuron mappings (first 10):\n", win_map[:10])
```

```
Collecting minisom
  Downloading minisom-2.3.5.tar.gz (12 kB)
    Preparing metadata (setup.py): started
    Preparing metadata (setup.py): finished with status 'done'
Building wheels for collected packages: minisom
  Building wheel for minisom (setup.py): started
  Building wheel for minisom (setup.py): finished with status 'done'
  Created wheel for minisom: filename=MiniSom-2.3.5-py3-none-any.whl size=12042
sha256=1e3b60dd0a4a9ba36c3d6e4ce415cde4e6bcc749e481f7484f11cf04d82005c
  Stored in directory: c:\users\harsh\appdata\local\pip\cache\wheels\19\db\95\5e
53bc2b88a328217fdf9f2886cafbe86b0df274f4b601f572
Successfully built minisom
Installing collected packages: minisom
Successfully installed minisom-2.3.5

DEPRECATION: Building 'minisom' using the legacy setup.py bdist_wheel
mechanism, which will be removed in a future version. pip 25.3 will enforce this
behaviour change. A possible replacement is to use the standardized build
```

interface by setting the `--use-pep517` option, (possibly combined with `--no-build-isolation`), or adding a `pyproject.toml` file to the source tree of 'minisom'. Discussion can be found at <https://github.com/pypa/pip/issues/6334>

```
[notice] A new release of pip is available: 25.1.1 -> 25.3
[notice] To update, run: python.exe -m pip install --upgrade pip
```

Sample SOM neuron mappings (first 10):

```
[[4 4]
 [3 4]
 [4 4]
 [3 4]
 [4 4]
 [1 3]
 [4 4]
 [4 4]
 [3 4]
 [4 4]]
```

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