

reseau_neurones

February 2, 2023

1 Réseaux de neurones

Réseaux de neurones avec scikit-learn.

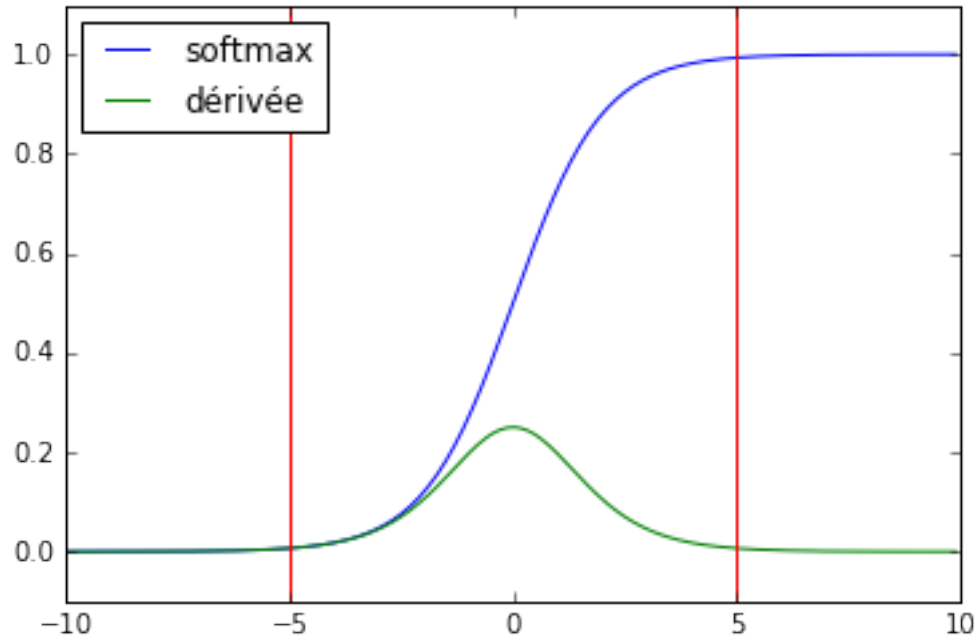
```
[1]: %matplotlib inline
```

```
[2]: from sklearn.linear_model import Perceptron
X = [[0., 0.], [1., 1.]]
y = [0, 1]
clf = Perceptron()
clf.fit(X, y)
```

```
[2]: Perceptron(alpha=0.0001, class_weight=None, eta0=1.0, fit_intercept=True,
               n_iter=5, n_jobs=1, penalty=None, random_state=0, shuffle=True,
               verbose=0, warm_start=False)
```

```
[3]: import matplotlib.pyplot as plt
import numpy
def softmax(x):
    return 1.0 / (1 + numpy.exp(-x))
def dsoftmax(x):
    t = numpy.exp(-x)
    return t / (1 + t)**2
x = numpy.arange(-10,10, 0.1)
y = softmax(x)
dy = dsoftmax(x)
fig, ax = plt.subplots(1,1)
ax.plot(x,y, label="softmax")
ax.plot(x,dy, label="dérivée")
ax.set_ylim([-0.1, 1.1])
ax.plot([-5, -5], [-0.1, 1.1], "r")
ax.plot([5, 5], [-0.1, 1.1], "r")
ax.legend(loc=2)
```

```
[3]: <matplotlib.legend.Legend at 0x1b651aeacf8>
```



[4]: x

```
[4]: array([ -1.00000000e+01,  -9.90000000e+00,  -9.80000000e+00,
            -9.70000000e+00,  -9.60000000e+00,  -9.50000000e+00,
            -9.40000000e+00,  -9.30000000e+00,  -9.20000000e+00,
            -9.10000000e+00,  -9.00000000e+00,  -8.90000000e+00,
            -8.80000000e+00,  -8.70000000e+00,  -8.60000000e+00,
            -8.50000000e+00,  -8.40000000e+00,  -8.30000000e+00,
            -8.20000000e+00,  -8.10000000e+00,  -8.00000000e+00,
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            -7.60000000e+00,  -7.50000000e+00,  -7.40000000e+00,
            -7.30000000e+00,  -7.20000000e+00,  -7.10000000e+00,
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            -6.70000000e+00,  -6.60000000e+00,  -6.50000000e+00,
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            -5.80000000e+00,  -5.70000000e+00,  -5.60000000e+00,
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            -5.20000000e+00,  -5.10000000e+00,  -5.00000000e+00,
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            -4.60000000e+00,  -4.50000000e+00,  -4.40000000e+00,
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            -3.70000000e+00,  -3.60000000e+00,  -3.50000000e+00,
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            -2.80000000e+00,  -2.70000000e+00,  -2.60000000e+00,
            -2.50000000e+00,  -2.40000000e+00,  -2.30000000e+00,
            -2.20000000e+00,  -2.10000000e+00,  -2.00000000e+00,
            -1.90000000e+00,  -1.80000000e+00,  -1.70000000e+00,
```

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-1.30000000e+00, -1.20000000e+00, -1.10000000e+00,
-1.00000000e+00, -9.00000000e-01, -8.00000000e-01,
-7.00000000e-01, -6.00000000e-01, -5.00000000e-01,
-4.00000000e-01, -3.00000000e-01, -2.00000000e-01,
-1.00000000e-01, -3.55271368e-14, 1.00000000e-01,
2.00000000e-01, 3.00000000e-01, 4.00000000e-01,
5.00000000e-01, 6.00000000e-01, 7.00000000e-01,
8.00000000e-01, 9.00000000e-01, 1.00000000e+00,
1.10000000e+00, 1.20000000e+00, 1.30000000e+00,
1.40000000e+00, 1.50000000e+00, 1.60000000e+00,
1.70000000e+00, 1.80000000e+00, 1.90000000e+00,
2.00000000e+00, 2.10000000e+00, 2.20000000e+00,
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3.80000000e+00, 3.90000000e+00, 4.00000000e+00,
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9.20000000e+00, 9.30000000e+00, 9.40000000e+00,
9.50000000e+00, 9.60000000e+00, 9.70000000e+00,
9.80000000e+00, 9.90000000e+00])

[5] :