

Assignment 1: Write a program to scheme a few activation functions that are used in neural networks

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Code =>
import numpy as np

import matplotlib.pyplot as plt
# Sigmoid Function
def sigmoid(x):
    return 1 / (1 + np.exp(-x))
# Tanh Function
def tanh(x):
    return np.tanh(x)
# ReLU Function
def relu(x):
    return np.maximum(0, x)

# Leaky ReLU Function
def leaky_relu(x, alpha=0.01):
    return np.where(x > 0, x, alpha * x)

# Generate Data
x = np.linspace(-10, 10, 400)

# Plot Functions
plt.figure(figsize=(10, 8))
plt.subplot(2, 2, 1)
plt.plot(x, sigmoid(x), label='Sigmoid', color='blue')
plt.title('Sigmoid Activation Function')
plt.grid(True)

plt.subplot(2, 2, 2)
plt.plot(x, tanh(x), label='Tanh', color='green')
plt.title('Tanh Activation Function')
plt.grid(True)

plt.subplot(2, 2, 3)
plt.plot(x, relu(x), label='ReLU', color='red')
plt.title('ReLU Activation Function')
plt.grid(True)

plt.subplot(2, 2, 4)
plt.plot(x, leaky_relu(x), label='Leaky ReLU', color='purple')
plt.title('Leaky ReLU Activation Function')
plt.grid(True)

plt.tight_layout()
plt.show()
```

Output=>

