import numpy as np

import matplotlib.pyplot as plt

import math

def weighted\_majority(d, T, n=100):

"""

d -- number of experts

T -- number of rounds

"""

nu = math.sqrt(2\*math.log(T)/d)

w = np.ones(d)

for t in range(1,T+1):

v = []

for i in range (1, d+1):

cost\_i = np.random.binomial(n, 1-(i/(2\*d)), d)/n

v.append(cost\_i)

np\_v = np.array(v)

cost = sum(v\*w)

w = [x \* cost for x in w]

return w

def plot\_loss(loss, round, d, T):

plt.plot(loss, round, 'b.')

plt.title("cumulative loss, d="+d+",T="+T)

plt.xlabel("round")

plt.ylabel("loss")

# plt.grid()

plt.legend()

plt.savefig("cumulative\_loss.png")

plt.show()

plt.clf()

def plot\_regret(regret, round, d, T):

plt.plot(regret, round, 'b.')

plt.title("regret of the weighted majority algorithm, d="+d+",T="+T)

plt.xlabel("round")

plt.ylabel("loss")

# plt.grid()

plt.legend()

plt.savefig("regret.png")

plt.show()

plt.clf()

print(weighted\_majority(d=10, T=100))

#plot\_loss(loss, round d=10, T=100)