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1: import sgd
2: import week6
3: import pandas as pd
4: import numpy as np
5:
6: if __name__ == "__main__":
7:     T = pd.read_csv("data/T.csv").values
8:
9:     o = sgd.StochasticGradientDescent().alg("constant")
10:    fg = week6.generate_optimisation_functions(T, minibatch_size=5)
11:    o.function_generator(fg)
12:    o.step_size(0.01)
13:    o.start(np.array([3, 3]))
14:    for i in range(100):
15:        o.step()
16:    print("constant", o._x_value)
17:
18:    o = sgd.StochasticGradientDescent().alg("polyak")
19:    fg = week6.generate_optimisation_functions(T, minibatch_size=10, shuffle=False)
20:    o.function_generator(fg)
21:    o.start(np.array([0.9, 0.9]))
22:    for i in range(100):
23:        o.step()
24:    print("polyak", o._x_value)
25:
26:    o = sgd.StochasticGradientDescent().alg("polyak")
27:    fg = week6.generate_optimisation_functions(T, minibatch_size=5)
28:    o.function_generator(fg)
29:    o.start(np.array([3, 3]))
30:    for i in range(100):
31:        o.step()
32:    print("polyak", o._x_value)
33:
34:    o = sgd.StochasticGradientDescent()
35:    fg = week6.generate_optimisation_functions(T, minibatch_size=5)
36:    o.function_generator(fg)
37:    o.start(np.array([3, 3]))
38:    o.step_size(0.00001)
39:    o.beta(0.99)
40:    o.alg("rmsprop")
41:    for i in range(100):
42:        o.step()
43:    print("rmsprop", o._x_value)
44:
45:    o = sgd.StochasticGradientDescent()
46:    fg = week6.generate_optimisation_functions(T, minibatch_size=5)
47:    o.function_generator(fg)
48:    o.start(np.array([3, 3]))
49:    o.step_size(0.00001)
50:    o.beta(0.99)
51:    o.alg("heavy_ball")
52:    for i in range(100):
53:        o.step()
54:    print("heavy_ball", o._x_value)
55:
56:    o = sgd.StochasticGradientDescent()
57:    fg = week6.generate_optimisation_functions(T, minibatch_size=5)
58:    o.function_generator(fg)
59:    o.start(np.array([3, 3]))
60:    o.step_size(0.00001)
61:    o.beta(0.99)
62:    o.beta2(0.25)
63:    o.alg("adam")
64:    for i in range(100):
65:        o.step()
66:    print("adam", o._x_value)
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