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1 C:\Users\Sapan\Downloads\4p80_assign1\assignCode\venv\Scripts\python.exe C:/Users/Sapan/Downloads/4p80_assign1/assignCode/main.py
2 2021-02-26 22:21:45.947515: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cudart64_110.dll'; dlsymError: cudart64_110.dll not found
3 2021-02-26 22:21:45.947893: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlsym error if you do not have a
GPU set up on your machine.
4 Please ignore red warning, those are for GPU which is not connected in the env. And make sure inputs are correct as there is no try
  catch block.
5 Sample input for Gradient Descent: 1,2,20,10,relu,0.1,0,9,20.. Sample input for RMSprop: 2,2,20,10,relu,0.009,0.9,0.9,20..
6 Do you want to perform ANOVA Test on different hyperparameters, if no enter 1. Otherwise, Enter number of variants: 3
7
8 Enter 1 for Gradient Descent, and 2 for RMSprop: 1
9 Enter number of hidden layer for test: 1
10 Enter number of neurons for 1 hidden layer: 20
11 Activation function for hidden layer: relu
12 Enter Learning rate for Gradient Descent: 0.09
13 Enter momentum for Gradient Descent: 0.4
14 Enter number of epochs (give 20): 20
15 2021-02-26 22:22:04.993030: I tensorflow/compiler/jit/xla_cpu_device.cc:41] Not creating XLA devices, tf_xla_enable_xla_devices not
  set
16 2021-02-26 22:22:04.994761: I tensorflow/stream_executor/platform/default/dso_loader.cc:49] Successfully opened dynamic library
  nvcuda.dll
17 2021-02-26 22:22:05.863369: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1720] Found device 0 with properties:
18 pciBusID: 0000:01:00.0 name: GeForce GTX 1050 Ti with Max-Q Design computeCapability: 6.1
19 coreClock: 1.4175GHz coreCount: 6 deviceMemorySize: 4.00GiB deviceMemoryBandwidth: 104.436GiB/s
20 2021-02-26 22:22:05.865049: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cudart64_110.dll'; dlsymError: cudart64_110.dll not found
21 2021-02-26 22:22:05.866386: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cublas64_11.dll'; dlsymError: cublas64_11.dll not found
22 2021-02-26 22:22:05.867710: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cublasLt64_11.dll'; dlsymError: cublasLt64_11.dll not found
23 2021-02-26 22:22:05.869501: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cufft64_10.dll'; dlsymError: cufft64_10.dll not found
24 2021-02-26 22:22:05.871082: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  curand64_10.dll'; dlsymError: curand64_10.dll not found
25 2021-02-26 22:22:05.872405: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cusolver64_10.dll'; dlsymError: cusolver64_10.dll not found
26 2021-02-26 22:22:05.873734: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cusparse64_11.dll'; dlsymError: cusparse64_11.dll not found
27 2021-02-26 22:22:05.875056: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library
  cudnn64_8.dll'; dlsymError: cudnn64_8.dll not found
28 2021-02-26 22:22:05.875391: W tensorflow/core/common_runtime/gpu/gpu_device.cc:1757] Cannot dlopen some GPU libraries. Please make
  sure the missing libraries mentioned above are installed properly if you would like to use GPU. Follow the guide at https://www.
  tensorflow.org/install/gpu for how to download and setup the required libraries for your platform.

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29 Skipping registering GPU devices...
30 2021-02-26 22:22:05.87004: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX2
31 To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
32 2021-02-26 22:22:05.878403: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1261] Device interconnect StreamExecutor with strength 1 edge matrix:
33 2021-02-26 22:22:05.878768: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1267]
34 2021-02-26 22:22:05.878980: I tensorflow/compiler/jit/xla_gpu_device.cc:99] Not creating XLA devices, tf_xla_enable_xla_devices not set

35 Training Stats of dist_in_1_dataset_6D
36 2021-02-26 22:22:05.939363: I mlir_graph_optimization_pass.cc:116] None of the MLIR optimization passes
are enabled (registered 2)

37 Epoch 1/20
38 5/5 - 0s - loss: 1.1584 - accuracy: 0.2482
39 Epoch 2/20
40 5/5 - 0s - loss: 1.0590 - accuracy: 0.4672
41 Epoch 3/20
42 5/5 - 0s - loss: 1.0320 - accuracy: 0.5474
43 Epoch 4/20
44 5/5 - 0s - loss: 1.0188 - accuracy: 0.4818
45 Epoch 5/20
46 5/5 - 0s - loss: 0.9891 - accuracy: 0.5839
47 Epoch 6/20
48 5/5 - 0s - loss: 0.9667 - accuracy: 0.6861
49 Epoch 7/20
50 5/5 - 0s - loss: 0.9348 - accuracy: 0.6277
51 Epoch 8/20
52 5/5 - 0s - loss: 0.9048 - accuracy: 0.4745
53 Epoch 9/20
54 5/5 - 0s - loss: 0.8614 - accuracy: 0.5693
55 Epoch 10/20
56 5/5 - 0s - loss: 0.8291 - accuracy: 0.8102
57 Epoch 11/20
58 5/5 - 0s - loss: 0.7845 - accuracy: 0.8102
59 Epoch 12/20
60 5/5 - 0s - loss: 0.7408 - accuracy: 0.9270
61 Epoch 13/20
62 5/5 - 0s - loss: 0.6778 - accuracy: 0.9489
63 Epoch 14/20
64 5/5 - 0s - loss: 0.6566 - accuracy: 0.8102
65 Epoch 15/20
66 5/5 - 0s - loss: 0.6081 - accuracy: 0.8613
67 Epoch 16/20
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68 5/5 - 0s - loss: 0.5650 - accuracy: 0.8613
69 Epoch 17/20
70 5/5 - 0s - loss: 0.5220 - accuracy: 0.8905
71 Epoch 18/20
72 5/5 - 0s - loss: 0.4849 - accuracy: 0.9197
73 Epoch 19/20
74 5/5 - 0s - loss: 0.4624 - accuracy: 0.9416
75 Epoch 20/20
76 5/5 - 0s - loss: 0.4259 - accuracy: 0.9197
77

78 Training Stats of dist_unknown_dataset_6D
79 Epoch 1/20
80 14/14 - 0s - loss: 0.9638 - accuracy: 0.5116
81 Epoch 2/20
82 14/14 - 0s - loss: 0.8115 - accuracy: 0.6366
83 Epoch 3/20
84 14/14 - 0s - loss: 0.6828 - accuracy: 0.7662
85 Epoch 4/20
86 14/14 - 0s - loss: 0.5558 - accuracy: 0.8611
87 Epoch 5/20
88 14/14 - 0s - loss: 0.4310 - accuracy: 0.9259
89 Epoch 6/20
90 14/14 - 0s - loss: 0.3562 - accuracy: 0.9282
91 Epoch 7/20
92 14/14 - 0s - loss: 0.2800 - accuracy: 0.9514
93 Epoch 8/20
94 14/14 - 0s - loss: 0.2485 - accuracy: 0.9491
95 Epoch 9/20
96 14/14 - 0s - loss: 0.2030 - accuracy: 0.9537
97 Epoch 10/20
98 14/14 - 0s - loss: 0.1904 - accuracy: 0.9468
99 Epoch 11/20
100 14/14 - 0s - loss: 0.1685 - accuracy: 0.9676
101 Epoch 12/20
102 14/14 - 0s - loss: 0.1539 - accuracy: 0.9699
103 Epoch 13/20
104 14/14 - 0s - loss: 0.1409 - accuracy: 0.9699
105 Epoch 14/20
106 14/14 - 0s - loss: 0.1270 - accuracy: 0.9722
107 Epoch 15/20
108 14/14 - 0s - loss: 0.1274 - accuracy: 0.9653
109 Epoch 16/20
110 14/14 - 0s - loss: 0.1230 - accuracy: 0.9699
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111 Epoch 17/20
112 14/14 - 0s - loss: 0.1133 - accuracy: 0.9699
113 Epoch 18/20
114 14/14 - 0s - loss: 0.1051 - accuracy: 0.9838
115 Epoch 19/20
116 14/14 - 0s - loss: 0.0944 - accuracy: 0.9815
117 Epoch 20/20
118 14/14 - 0s - loss: 0.0930 - accuracy: 0.9838
119
120 Training Stats of dist_out_dataset_6D
121 Epoch 1/20
122 9/9 - 0s - loss: 0.8956 - accuracy: 0.5736
123 Epoch 2/20
124 9/9 - 0s - loss: 0.5365 - accuracy: 0.7868
125 Epoch 3/20
126 9/9 - 0s - loss: 0.3931 - accuracy: 0.8140
127 Epoch 4/20
128 9/9 - 0s - loss: 0.3214 - accuracy: 0.8488
129 Epoch 5/20
130 9/9 - 0s - loss: 0.2912 - accuracy: 0.8643
131 Epoch 6/20
132 9/9 - 0s - loss: 0.2796 - accuracy: 0.8682
133 Epoch 7/20
134 9/9 - 0s - loss: 0.2599 - accuracy: 0.8953
135 Epoch 8/20
136 9/9 - 0s - loss: 0.2508 - accuracy: 0.8837
137 Epoch 9/20
138 9/9 - 0s - loss: 0.2195 - accuracy: 0.8992
139 Epoch 10/20
140 9/9 - 0s - loss: 0.2492 - accuracy: 0.8760
141 Epoch 11/20
142 9/9 - 0s - loss: 0.2054 - accuracy: 0.9264
143 Epoch 12/20
144 9/9 - 0s - loss: 0.1996 - accuracy: 0.9109
145 Epoch 13/20
146 9/9 - 0s - loss: 0.1947 - accuracy: 0.9186
147 Epoch 14/20
148 9/9 - 0s - loss: 0.1911 - accuracy: 0.9186
149 Epoch 15/20
150 9/9 - 0s - loss: 0.2151 - accuracy: 0.8798
151 Epoch 16/20
152 9/9 - 0s - loss: 0.1993 - accuracy: 0.9031
153 Epoch 17/20
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154 9/9 - 0s - loss: 0.2132 - accuracy: 0.8876
155 Epoch 18/20
156 9/9 - 0s - loss: 0.1743 - accuracy: 0.9070
157 Epoch 19/20
158 9/9 - 0s - loss: 0.1687 - accuracy: 0.9147
159 Epoch 20/20
160 9/9 - 0s - loss: 0.2033 - accuracy: 0.8915
161
162 Training Stats of presence_in_dataset_6D
163 Epoch 1/20
164 12/12 - 1s - loss: 0.6596 - accuracy: 0.5801 - false_positives: 134.0000 - false_negatives: 18.0000
165 Epoch 2/20
166 12/12 - 0s - loss: 0.5800 - accuracy: 0.7680 - false_positives: 81.0000 - false_negatives: 3.0000
167 Epoch 3/20
168 12/12 - 0s - loss: 0.4825 - accuracy: 0.8343 - false_positives: 56.0000 - false_negatives: 4.0000
169 Epoch 4/20
170 12/12 - 0s - loss: 0.3826 - accuracy: 0.9420 - false_positives: 18.0000 - false_negatives: 3.0000
171 Epoch 5/20
172 12/12 - 0s - loss: 0.2972 - accuracy: 0.9530 - false_positives: 15.0000 - false_negatives: 2.0000
173 Epoch 6/20
174 12/12 - 0s - loss: 0.2410 - accuracy: 0.9613 - false_positives: 14.0000 - false_negatives: 0.0000e+00
175 Epoch 7/20
176 12/12 - 0s - loss: 0.1948 - accuracy: 0.9669 - false_positives: 11.0000 - false_negatives: 1.0000
177 Epoch 8/20
178 12/12 - 0s - loss: 0.1715 - accuracy: 0.9724 - false_positives: 9.0000 - false_negatives: 1.0000
179 Epoch 9/20
180 12/12 - 0s - loss: 0.1603 - accuracy: 0.9530 - false_positives: 15.0000 - false_negatives: 2.0000
181 Epoch 10/20
182 12/12 - 0s - loss: 0.1364 - accuracy: 0.9807 - false_positives: 6.0000 - false_negatives: 1.0000
183 Epoch 11/20
184 12/12 - 0s - loss: 0.1255 - accuracy: 0.9779 - false_positives: 8.0000 - false_negatives: 0.0000e+00
185 Epoch 12/20
186 12/12 - 0s - loss: 0.1165 - accuracy: 0.9862 - false_positives: 5.0000 - false_negatives: 0.0000e+00
187 Epoch 13/20
188 12/12 - 0s - loss: 0.1133 - accuracy: 0.9751 - false_positives: 7.0000 - false_negatives: 2.0000
189 Epoch 14/20
190 12/12 - 0s - loss: 0.1064 - accuracy: 0.9751 - false_positives: 6.0000 - false_negatives: 3.0000
191 Epoch 15/20
192 12/12 - 0s - loss: 0.1016 - accuracy: 0.9807 - false_positives: 7.0000 - false_negatives: 0.0000e+00
193 Epoch 16/20
194 12/12 - 0s - loss: 0.0924 - accuracy: 0.9862 - false_positives: 5.0000 - false_negatives: 0.0000e+00
195 Epoch 17/20
196 12/12 - 0s - loss: 0.0882 - accuracy: 0.9890 - false_positives: 4.0000 - false_negatives: 0.0000e+00

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197 Epoch 18/20
198 12/12 - 0s - loss: 0.0852 - accuracy: 0.9807 - false_positives: 7.0000 - false_negatives: 0.0000e+00
199 Epoch 19/20
200 12/12 - 0s - loss: 0.0810 - accuracy: 0.9890 - false_positives: 4.0000 - false_negatives: 0.0000e+00
201 Epoch 20/20
202 12/12 - 0s - loss: 0.0791 - accuracy: 0.9862 - false_positives: 5.0000 - false_negatives: 0.0000e+00
203

204 Training Stats of presence_out_dataset_GD
205 Epoch 1/20
206 13/13 - 1s - loss: 0.6222 - accuracy: 0.6597 - false_positives: 101.0000 - false_negatives: 30.0000
207 Epoch 2/20
208 13/13 - 0s - loss: 0.5840 - accuracy: 0.6597 - false_positives: 102.0000 - false_negatives: 29.0000
209 Epoch 3/20
210 13/13 - 0s - loss: 0.5755 - accuracy: 0.6649 - false_positives: 85.0000 - false_negatives: 44.0000
211 Epoch 4/20
212 13/13 - 0s - loss: 0.5573 - accuracy: 0.6831 - false_positives: 70.0000 - false_negatives: 52.0000
213 Epoch 5/20
214 13/13 - 0s - loss: 0.5525 - accuracy: 0.7377 - false_positives: 82.0000 - false_negatives: 19.0000
215 Epoch 6/20
216 13/13 - 0s - loss: 0.5105 - accuracy: 0.7429 - false_positives: 58.0000 - false_negatives: 41.0000
217 Epoch 7/20
218 13/13 - 0s - loss: 0.4824 - accuracy: 0.7714 - false_positives: 62.0000 - false_negatives: 26.0000
219 Epoch 8/20
220 13/13 - 0s - loss: 0.5126 - accuracy: 0.7169 - false_positives: 67.0000 - false_negatives: 42.0000
221 Epoch 9/20
222 13/13 - 0s - loss: 0.4688 - accuracy: 0.7948 - false_positives: 60.0000 - false_negatives: 19.0000
223 Epoch 10/20
224 13/13 - 0s - loss: 0.4849 - accuracy: 0.7351 - false_positives: 58.0000 - false_negatives: 44.0000
225 Epoch 11/20
226 13/13 - 0s - loss: 0.4287 - accuracy: 0.8052 - false_positives: 53.0000 - false_negatives: 22.0000
227 Epoch 12/20
228 13/13 - 0s - loss: 0.4455 - accuracy: 0.7688 - false_positives: 50.0000 - false_negatives: 39.0000
229 Epoch 13/20
230 13/13 - 0s - loss: 0.3771 - accuracy: 0.8468 - false_positives: 40.0000 - false_negatives: 19.0000
231 Epoch 14/20
232 13/13 - 0s - loss: 0.3813 - accuracy: 0.8234 - false_positives: 38.0000 - false_negatives: 30.0000
233 Epoch 15/20
234 13/13 - 0s - loss: 0.4768 - accuracy: 0.7429 - false_positives: 55.0000 - false_negatives: 44.0000
235 Epoch 16/20
236 13/13 - 0s - loss: 0.3603 - accuracy: 0.8312 - false_positives: 47.0000 - false_negatives: 18.0000
237 Epoch 17/20
238 13/13 - 0s - loss: 0.4281 - accuracy: 0.7532 - false_positives: 57.0000 - false_negatives: 38.0000
239 Epoch 18/20

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240 13/13 - 0s - loss: 0.3253 - accuracy: 0.8468 - false_positives: 47.0000 - false_negatives: 12.0000
241 Epoch 19/20
242 13/13 - 0s - loss: 0.3215 - accuracy: 0.8390 - false_positives: 43.0000 - false_negatives: 19.0000
243 Epoch 20/20
244 13/13 - 0s - loss: 0.3115 - accuracy: 0.8623 - false_positives: 44.0000 - false_negatives: 9.0000
245
246 Training Stats of qty_in_dataset_GD
247 Epoch 1/20
248 12/12 - 0s - loss: 1.2822 - accuracy: 0.4558
249 Epoch 2/20
250 12/12 - 0s - loss: 1.0920 - accuracy: 0.6271
251 Epoch 3/20
252 12/12 - 0s - loss: 0.9657 - accuracy: 0.6796
253 Epoch 4/20
254 12/12 - 0s - loss: 0.8366 - accuracy: 0.7155
255 Epoch 5/20
256 12/12 - 0s - loss: 0.7487 - accuracy: 0.7265
257 Epoch 6/20
258 12/12 - 0s - loss: 0.6789 - accuracy: 0.7155
259 Epoch 7/20
260 12/12 - 0s - loss: 0.6110 - accuracy: 0.7514
261 Epoch 8/20
262 12/12 - 0s - loss: 0.5702 - accuracy: 0.7376
263 Epoch 9/20
264 12/12 - 0s - loss: 0.5042 - accuracy: 0.7624
265 Epoch 10/20
266 12/12 - 0s - loss: 0.4524 - accuracy: 0.8453
267 Epoch 11/20
268 12/12 - 0s - loss: 0.4130 - accuracy: 0.8702
269 Epoch 12/20
270 12/12 - 0s - loss: 0.3805 - accuracy: 0.8812
271 Epoch 13/20
272 12/12 - 0s - loss: 0.3439 - accuracy: 0.8923
273 Epoch 14/20
274 12/12 - 0s - loss: 0.3170 - accuracy: 0.8840
275 Epoch 15/20
276 12/12 - 0s - loss: 0.3008 - accuracy: 0.9006
277 Epoch 16/20
278 12/12 - 0s - loss: 0.2853 - accuracy: 0.8978
279 Epoch 17/20
280 12/12 - 0s - loss: 0.2719 - accuracy: 0.9033
281 Epoch 18/20
282 12/12 - 0s - loss: 0.2646 - accuracy: 0.9033
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283	Epoch 19/20
284	12/12 - 0s - loss: 0.2416 - accuracy: 0.9337
285	Epoch 20/20
286	12/12 - 0s - loss: 0.2399 - accuracy: 0.9171
287	
288	Training Stats of qty_unknown_dataset_6D
289	Epoch 1/20
290	16/16 - 0s - loss: 0.9043 - accuracy: 0.6567
291	Epoch 2/20
292	16/16 - 0s - loss: 0.4488 - accuracy: 0.9321
293	Epoch 3/20
294	16/16 - 0s - loss: 0.2375 - accuracy: 0.9920
295	Epoch 4/20
296	16/16 - 0s - loss: 0.1512 - accuracy: 0.9960
297	Epoch 5/20
298	16/16 - 0s - loss: 0.1034 - accuracy: 0.9960
299	Epoch 6/20
300	16/16 - 0s - loss: 0.0786 - accuracy: 0.9980
301	Epoch 7/20
302	16/16 - 0s - loss: 0.0650 - accuracy: 0.9960
303	Epoch 8/20
304	16/16 - 0s - loss: 0.0563 - accuracy: 0.9960
305	Epoch 9/20
306	16/16 - 0s - loss: 0.0451 - accuracy: 0.9980
307	Epoch 10/20
308	16/16 - 0s - loss: 0.0398 - accuracy: 0.9980
309	Epoch 11/20
310	16/16 - 0s - loss: 0.0356 - accuracy: 1.0000
311	Epoch 12/20
312	16/16 - 0s - loss: 0.0317 - accuracy: 0.9980
313	Epoch 13/20
314	16/16 - 0s - loss: 0.0291 - accuracy: 1.0000
315	Epoch 14/20
316	16/16 - 0s - loss: 0.0267 - accuracy: 1.0000
317	Epoch 15/20
318	16/16 - 0s - loss: 0.0247 - accuracy: 1.0000
319	Epoch 16/20
320	16/16 - 0s - loss: 0.0226 - accuracy: 0.9980
321	Epoch 17/20
322	16/16 - 0s - loss: 0.0208 - accuracy: 0.9980
323	Epoch 18/20
324	16/16 - 0s - loss: 0.0201 - accuracy: 1.0000
325	Epoch 19/20

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326 16/16 - 0s - loss: 0.0184 - accuracy: 1.0000
327 Epoch 20/20
328 16/16 - 0s - loss: 0.0180 - accuracy: 1.0000
329
330 Training Stats of Location_dataset_60:
331 Epoch 1/20
332 24/24 - 1s - loss: 0.6024 - accuracy: 0.4900 - false_positives: 51.0000 - false_negatives: 330.0000
333 Epoch 2/20
334 24/24 - 0s - loss: 0.4502 - accuracy: 0.8019 - false_positives: 62.0000 - false_negatives: 86.0000
335 Epoch 3/20
336 24/24 - 0s - loss: 0.3682 - accuracy: 0.9090 - false_positives: 68.0000 - false_negatives: 0.0000e+00
337 Epoch 4/20
338 24/24 - 0s - loss: 0.3170 - accuracy: 0.9076 - false_positives: 69.0000 - false_negatives: 0.0000e+00
339 Epoch 5/20
340 24/24 - 0s - loss: 0.2872 - accuracy: 0.9076 - false_positives: 69.0000 - false_negatives: 0.0000e+00
341 Epoch 6/20
342 24/24 - 0s - loss: 0.2718 - accuracy: 0.9090 - false_positives: 68.0000 - false_negatives: 0.0000e+00
343 Epoch 7/20
344 24/24 - 0s - loss: 0.2625 - accuracy: 0.9103 - false_positives: 67.0000 - false_negatives: 0.0000e+00
345 Epoch 8/20
346 24/24 - 0s - loss: 0.2564 - accuracy: 0.9103 - false_positives: 67.0000 - false_negatives: 0.0000e+00
347 Epoch 9/20
348 24/24 - 0s - loss: 0.2521 - accuracy: 0.9116 - false_positives: 66.0000 - false_negatives: 0.0000e+00
349 Epoch 10/20
350 24/24 - 0s - loss: 0.2488 - accuracy: 0.9130 - false_positives: 65.0000 - false_negatives: 0.0000e+00
351 Epoch 11/20
352 24/24 - 0s - loss: 0.2465 - accuracy: 0.9130 - false_positives: 65.0000 - false_negatives: 0.0000e+00
353 Epoch 12/20
354 24/24 - 0s - loss: 0.2445 - accuracy: 0.9130 - false_positives: 65.0000 - false_negatives: 0.0000e+00
355 Epoch 13/20
356 24/24 - 0s - loss: 0.2427 - accuracy: 0.9130 - false_positives: 65.0000 - false_negatives: 0.0000e+00
357 Epoch 14/20
358 24/24 - 0s - loss: 0.2415 - accuracy: 0.9130 - false_positives: 65.0000 - false_negatives: 0.0000e+00
359 Epoch 15/20
360 24/24 - 0s - loss: 0.2401 - accuracy: 0.9130 - false_positives: 65.0000 - false_negatives: 0.0000e+00
361 Epoch 16/20
362 24/24 - 0s - loss: 0.2390 - accuracy: 0.9143 - false_positives: 64.0000 - false_negatives: 0.0000e+00
363 Epoch 17/20
364 24/24 - 0s - loss: 0.2381 - accuracy: 0.9143 - false_positives: 64.0000 - false_negatives: 0.0000e+00
365 Epoch 18/20
366 24/24 - 0s - loss: 0.2373 - accuracy: 0.9157 - false_positives: 63.0000 - false_negatives: 0.0000e+00
367 Epoch 19/20
368 24/24 - 0s - loss: 0.2363 - accuracy: 0.9170 - false_positives: 62.0000 - false_negatives: 0.0000e+00
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369 Epoch 20/20
370 24/24 - 0s - loss: 0.2354 - accuracy: 0.9170 - false_positives: 62.0000 - false_negatives: 0.0000e+00
371
372 Model evaluations on test data set:
373 2/2 [=====] - 0s 1ms/step - loss: 0.4951 - accuracy: 0.8261
374 5/5 [=====] - 0s 749us/step - loss: 0.0869 - accuracy: 0.9861
375 3/3 [=====] - 0s 1ms/step - loss: 0.3206 - accuracy: 0.8046
376 4/4 [=====] - 0s 997us/step - loss: 0.0903 - accuracy: 0.9917 - false_positives: 1.0000 - false_negatives
: 0.0000e+00
377 5/5 [=====] - 0s 748us/step - loss: 1.2148 - accuracy: 0.6899 - false_positives: 40.0000 -
false_negatives: 0.0000e+00
378 4/4 [=====] - 0s 666us/step - loss: 0.2153 - accuracy: 0.9752
379 6/6 [=====] - 0s 800us/step - loss: 0.0149 - accuracy: 1.0000
380 8/8 [=====] - 0s 799us/step - loss: 0.2114 - accuracy: 0.9320 - false_positives: 17.0000 -
false_negatives: 0.0000e+00
381
382 Hyperparameters for this run: Model1_Hidden:1_Neurons[20]_LR0.09_M0.4
383
384 Enter 1 for Gradient Descent, and 2 for RMSprop: 1
385 Enter number of hidden layer for test: 1
386 Enter number of neurons for 1 hidden layer: 20
387 Activation function for hidden layer: relu
388 Enter learning rate for Gradient Descent: 0.4
389 Enter momentum for Gradient Descent: 0.7
390 Enter number of epochs (give 20): 20
391 Training Stats of dist_in_1_dataset_GD
392 Epoch 1/20
393 5/5 - loss: 1.2048 - accuracy: 0.3431
394 Epoch 2/20
395 5/5 - 0s - loss: 0.9132 - accuracy: 0.6861
396 Epoch 3/20
397 5/5 - 0s - loss: 0.7817 - accuracy: 0.6204
398 Epoch 4/20
399 5/5 - 0s - loss: 0.5824 - accuracy: 0.7591
400 Epoch 5/20
401 5/5 - 0s - loss: 0.4149 - accuracy: 0.7883
402 Epoch 6/20
403 5/5 - 0s - loss: 0.4413 - accuracy: 0.7664
404 Epoch 7/20
405 5/5 - 0s - loss: 0.3012 - accuracy: 0.9416
406 Epoch 8/20
407 5/5 - 0s - loss: 0.2322 - accuracy: 0.9635
408 Epoch 9/20
```

```
409 5/5 - 0s - loss: 0.2727 - accuracy: 0.8540
410 Epoch 10/20
411 5/5 - 0s - loss: 0.4833 - accuracy: 0.7664
412 Epoch 11/20
413 5/5 - 0s - loss: 0.1922 - accuracy: 0.9708
414 Epoch 12/20
415 5/5 - 0s - loss: 0.1501 - accuracy: 0.9781
416 Epoch 13/20
417 5/5 - 0s - loss: 0.0996 - accuracy: 0.9781
418 Epoch 14/20
419 5/5 - 0s - loss: 0.0743 - accuracy: 0.9927
420 Epoch 15/20
421 5/5 - 0s - loss: 0.2822 - accuracy: 0.8686
422 Epoch 16/20
423 5/5 - 0s - loss: 0.0958 - accuracy: 0.9708
424 Epoch 17/20
425 5/5 - 0s - loss: 0.1113 - accuracy: 0.9635
426 Epoch 18/20
427 5/5 - 0s - loss: 0.0718 - accuracy: 0.9854
428 Epoch 19/20
429 5/5 - 0s - loss: 0.0477 - accuracy: 0.9927
430 Epoch 20/20
431 5/5 - 0s - loss: 1.0723 - accuracy: 0.6496
432
433 Training Stats of dist_unknown_dataset_6D
434 Epoch 1/20
435 14/14 - 0s - loss: 1.00516 - accuracy: 0.4722
436 Epoch 2/20
437 14/14 - 0s - loss: 0.8269 - accuracy: 0.5347
438 Epoch 3/20
439 14/14 - 0s - loss: 0.9651 - accuracy: 0.6782
440 Epoch 4/20
441 14/14 - 0s - loss: 0.5253 - accuracy: 0.7639
442 Epoch 5/20
443 14/14 - 0s - loss: 0.5261 - accuracy: 0.7245
444 Epoch 6/20
445 14/14 - 0s - loss: 0.4651 - accuracy: 0.7940
446 Epoch 7/20
447 14/14 - 0s - loss: 0.4414 - accuracy: 0.8356
448 Epoch 8/20
449 14/14 - 0s - loss: 0.3813 - accuracy: 0.8542
450 Epoch 9/20
451 14/14 - 0s - loss: 0.3057 - accuracy: 0.8843
```

```
452 Epoch 10/20
453 14/14 - 0s - loss: 2.5783 - accuracy: 0.4907
454 Epoch 11/20
455 14/14 - 0s - loss: 1.1631 - accuracy: 0.5069
456 Epoch 12/20
457 14/14 - 0s - loss: 1.0382 - accuracy: 0.5069
458 Epoch 13/20
459 14/14 - 0s - loss: 1.0359 - accuracy: 0.5069
460 Epoch 14/20
461 14/14 - 0s - loss: 1.0434 - accuracy: 0.5069
462 Epoch 15/20
463 14/14 - 0s - loss: 1.0467 - accuracy: 0.4491
464 Epoch 16/20
465 14/14 - 0s - loss: 1.0371 - accuracy: 0.5069
466 Epoch 17/20
467 14/14 - 0s - loss: 1.0306 - accuracy: 0.5069
468 Epoch 18/20
469 14/14 - 0s - loss: 1.0350 - accuracy: 0.5069
470 Epoch 19/20
471 14/14 - 0s - loss: 1.0369 - accuracy: 0.5069
472 Epoch 20/20
473 14/14 - 0s - loss: 1.0446 - accuracy: 0.5069
474
475 Training Stats of dist_out_dataset_60
476 Epoch 1/20
477 9/9 - 0s - loss: 1.0844 - accuracy: 0.4845
478 Epoch 2/20
479 9/9 - 0s - loss: 0.9635 - accuracy: 0.6357
480 Epoch 3/20
481 9/9 - 0s - loss: 0.3312 - accuracy: 0.8488
482 Epoch 4/20
483 9/9 - 0s - loss: 0.6599 - accuracy: 0.7519
484 Epoch 5/20
485 9/9 - 0s - loss: 0.4136 - accuracy: 0.8295
486 Epoch 6/20
487 9/9 - 0s - loss: 0.3998 - accuracy: 0.8256
488 Epoch 7/20
489 9/9 - 0s - loss: 0.3892 - accuracy: 0.8295
490 Epoch 8/20
491 9/9 - 0s - loss: 0.3865 - accuracy: 0.8295
492 Epoch 9/20
493 9/9 - 0s - loss: 0.3867 - accuracy: 0.8295
494 Epoch 10/20
```

```

495 9/9 - 0s - Loss: 0.3855 - accuracy: 0.8295
496 Epoch 11/20
497 9/9 - 0s - Loss: 0.3846 - accuracy: 0.8295
498 Epoch 12/20
499 9/9 - 0s - Loss: 0.3746 - accuracy: 0.8295
500 Epoch 13/20
501 9/9 - 0s - Loss: 0.3484 - accuracy: 0.8411
502 Epoch 14/20
503 9/9 - 0s - Loss: 0.3144 - accuracy: 0.8372
504 Epoch 15/20
505 9/9 - 0s - Loss: 0.2584 - accuracy: 0.8876
506 Epoch 16/20
507 9/9 - 0s - Loss: 1.1349 - accuracy: 0.6977
508 Epoch 17/20
509 9/9 - 0s - Loss: 0.5860 - accuracy: 0.7791
510 Epoch 18/20
511 9/9 - 0s - Loss: 0.6093 - accuracy: 0.6512
512 Epoch 19/20
513 9/9 - 0s - Loss: 0.3913 - accuracy: 0.8295
514 Epoch 20/20
515 9/9 - 0s - Loss: 0.3791 - accuracy: 0.8295
516
517 Training Stats of presence_in_dataset_6D
518 Epoch 1/20
519 12/12 - 1s - Loss: 0.5016 - accuracy: 0.7265 - false_positives: 73.0000 - false_negatives: 26.0000
520 Epoch 2/20
521 12/12 - 0s - Loss: 0.1737 - accuracy: 0.9254 - false_positives: 14.0000 - false_negatives: 13.0000
522 Epoch 3/20
523 12/12 - 0s - Loss: 0.0905 - accuracy: 0.9724 - false_positives: 6.0000 - false_negatives: 4.0000
524 Epoch 4/20
525 12/12 - 0s - Loss: 0.0761 - accuracy: 0.9641 - false_positives: 7.0000 - false_negatives: 6.0000
526 Epoch 5/20
527 12/12 - 0s - Loss: 0.0631 - accuracy: 0.9779 - false_positives: 6.0000 - false_negatives: 2.0000
528 Epoch 6/20
529 12/12 - 0s - Loss: 0.0457 - accuracy: 0.9890 - false_positives: 3.0000 - false_negatives: 1.0000
530 Epoch 7/20
531 12/12 - 0s - Loss: 0.0543 - accuracy: 0.9807 - false_positives: 4.0000 - false_negatives: 3.0000
532 Epoch 8/20
533 12/12 - 0s - Loss: 0.0270 - accuracy: 1.0000 - false_positives: 0.0000e+00 - false_negatives: 0.0000e+00
534 Epoch 9/20
535 12/12 - 0s - Loss: 0.0283 - accuracy: 0.9945 - false_positives: 1.0000 - false_negatives: 1.0000
536 Epoch 10/20
537 12/12 - 0s - Loss: 0.0216 - accuracy: 0.9972 - false_positives: 0.0000e+00 - false_negatives: 1.0000

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538 Epoch 11/20
539 12/12 - 0s - loss: 0.0272 - accuracy: 0.9945 - false_positives: 1.0000 - false_negatives: 1.0000
540 Epoch 12/20
541 12/12 - 0s - loss: 0.0157 - accuracy: 0.9972 - false_positives: 0.0000e+00 - false_negatives: 1.0000
542 Epoch 13/20
543 12/12 - 0s - loss: 0.0430 - accuracy: 0.9751 - false_positives: 6.0000 - false_negatives: 3.0000
544 Epoch 14/20
545 12/12 - 0s - loss: 0.0166 - accuracy: 0.9972 - false_positives: 1.0000 - false_negatives: 0.0000e+00
546 Epoch 15/20
547 12/12 - 0s - loss: 0.0169 - accuracy: 0.9945 - false_positives: 1.0000 - false_negatives: 1.0000
548 Epoch 16/20
549 12/12 - 0s - loss: 0.0110 - accuracy: 1.0000 - false_positives: 0.0000e+00 - false_negatives: 0.0000e+00
550 Epoch 17/20
551 12/12 - 0s - loss: 0.0131 - accuracy: 1.0000 - false_positives: 0.0000e+00 - false_negatives: 0.0000e+00
552 Epoch 18/20
553 12/12 - 0s - loss: 0.0110 - accuracy: 0.9972 - false_positives: 1.0000 - false_negatives: 0.0000e+00
554 Epoch 19/20
555 12/12 - 0s - loss: 0.0103 - accuracy: 0.9972 - false_positives: 0.0000e+00 - false_negatives: 1.0000
556 Epoch 20/20
557 12/12 - 0s - loss: 0.0105 - accuracy: 1.0000 - false_positives: 0.0000e+00 - false_negatives: 0.0000e+00
558
559 Training Stats of presence_out_dataset_6D
560 Epoch 1/20
561 13/13 - 1s - loss: 0.6377 - accuracy: 0.6260 - false_positives: 121.0000 - false_negatives: 23.0000
562 Epoch 2/20
563 13/13 - 0s - loss: 0.7484 - accuracy: 0.6130 - false_positives: 122.0000 - false_negatives: 27.0000
564 Epoch 3/20
565 13/13 - 0s - loss: 0.5776 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
566 Epoch 4/20
567 13/13 - 0s - loss: 0.5849 - accuracy: 0.6182 - false_positives: 43.0000 - false_negatives: 104.0000
568 Epoch 5/20
569 13/13 - 0s - loss: 0.6448 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
570 Epoch 6/20
571 13/13 - 0s - loss: 0.6099 - accuracy: 0.6260 - false_positives: 111.0000 - false_negatives: 33.0000
572 Epoch 7/20
573 13/13 - 0s - loss: 0.5594 - accuracy: 0.6000 - false_positives: 77.0000 - false_negatives: 77.0000
574 Epoch 8/20
575 13/13 - 0s - loss: 0.5966 - accuracy: 0.5792 - false_positives: 75.0000 - false_negatives: 87.0000
576 Epoch 9/20
577 13/13 - 0s - loss: 0.5343 - accuracy: 0.6727 - false_positives: 117.0000 - false_negatives: 9.0000
578 Epoch 10/20
579 13/13 - 0s - loss: 0.5445 - accuracy: 0.6208 - false_positives: 56.0000 - false_negatives: 90.0000
580 Epoch 11/20
```

```
581 13/13 - 0s - loss: 0.5128 - accuracy: 0.6805 - false_positives: 108.0000 - false_negatives: 15.0000
582 Epoch 12/20
583 13/13 - 0s - loss: 0.5672 - accuracy: 0.6468 - false_positives: 70.0000 - false_negatives: 66.0000
584 Epoch 13/20
585 13/13 - 0s - loss: 0.4596 - accuracy: 0.7481 - false_positives: 17.0000 - false_negatives: 80.0000
586 Epoch 14/20
587 13/13 - 0s - loss: 0.4706 - accuracy: 0.7299 - false_positives: 17.0000 - false_negatives: 87.0000
588 Epoch 15/20
589 13/13 - 0s - loss: 0.5697 - accuracy: 0.6000 - false_positives: 73.0000 - false_negatives: 81.0000
590 Epoch 16/20
591 13/13 - 0s - loss: 1.1603 - accuracy: 0.6312 - false_positives: 118.0000 - false_negatives: 24.0000
592 Epoch 17/20
593 13/13 - 0s - loss: 0.6401 - accuracy: 0.6701 - false_positives: 125.0000 - false_negatives: 2.0000
594 Epoch 18/20
595 13/13 - 0s - loss: 0.6138 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
596 Epoch 19/20
597 13/13 - 0s - loss: 0.5883 - accuracy: 0.6494 - false_positives: 114.0000 - false_negatives: 21.0000
598 Epoch 20/20
599 13/13 - 0s - loss: 0.5115 - accuracy: 0.7506 - false_positives: 67.0000 - false_negatives: 29.0000
600
601 Training Stats of qty_in_dataset_GD
602 Epoch 1/20
603 12/12 - 0s - loss: 1.1683 - accuracy: 0.5055
604 Epoch 2/20
605 12/12 - 0s - loss: 1.0484 - accuracy: 0.5387
606 Epoch 3/20
607 12/12 - 0s - loss: 0.6990 - accuracy: 0.7486
608 Epoch 4/20
609 12/12 - 0s - loss: 0.5985 - accuracy: 0.7376
610 Epoch 5/20
611 12/12 - 0s - loss: 0.4160 - accuracy: 0.8591
612 Epoch 6/20
613 12/12 - 0s - loss: 0.3350 - accuracy: 0.8536
614 Epoch 7/20
615 12/12 - 0s - loss: 0.4771 - accuracy: 0.7707
616 Epoch 8/20
617 12/12 - 0s - loss: 0.4206 - accuracy: 0.8122
618 Epoch 9/20
619 12/12 - 0s - loss: 0.9903 - accuracy: 0.7541
620 Epoch 10/20
621 12/12 - 0s - loss: 0.8464 - accuracy: 0.6657
622 Epoch 11/20
623 12/12 - 0s - loss: 0.4595 - accuracy: 0.8867
```

```
624 Epoch 12/20
625 12/12 - 0s - loss: 0.4469 - accuracy: 0.8536
626 Epoch 13/20
627 12/12 - 0s - loss: 0.3587 - accuracy: 0.8785
628 Epoch 14/20
629 12/12 - 0s - loss: 0.3057 - accuracy: 0.8895
630 Epoch 15/20
631 12/12 - 0s - loss: 1.6263 - accuracy: 0.5939
632 Epoch 16/20
633 12/12 - 0s - loss: 0.9114 - accuracy: 0.6768
634 Epoch 17/20
635 12/12 - 0s - loss: 0.4015 - accuracy: 0.8702
636 Epoch 18/20
637 12/12 - 0s - loss: 0.4652 - accuracy: 0.8481
638 Epoch 19/20
639 12/12 - 0s - loss: 0.3446 - accuracy: 0.8895
640 Epoch 20/20
641 12/12 - 0s - loss: 0.3810 - accuracy: 0.8536
642
643 Training Stats of qty_unknown_dataset_6D
644 Epoch 1/20
645 16/16 - 0s - loss: 0.9110 - accuracy: 0.5848
646 Epoch 2/20
647 16/16 - 0s - loss: 0.0838 - accuracy: 0.9940
648 Epoch 3/20
649 16/16 - 0s - loss: 0.0313 - accuracy: 0.9920
650 Epoch 4/20
651 16/16 - 0s - loss: 0.0143 - accuracy: 1.0000
652 Epoch 5/20
653 16/16 - 0s - loss: 0.0133 - accuracy: 0.9980
654 Epoch 6/20
655 16/16 - 0s - loss: 0.0067 - accuracy: 1.0000
656 Epoch 7/20
657 16/16 - 0s - loss: 0.0065 - accuracy: 1.0000
658 Epoch 8/20
659 16/16 - 0s - loss: 0.0052 - accuracy: 1.0000
660 Epoch 9/20
661 16/16 - 0s - loss: 0.0050 - accuracy: 1.0000
662 Epoch 10/20
663 16/16 - 0s - loss: 0.0035 - accuracy: 1.0000
664 Epoch 11/20
665 16/16 - 0s - loss: 0.0036 - accuracy: 1.0000
666 Epoch 12/20
```

```
667 16/16 - 0s - loss: 0.0030 - accuracy: 1.0000
668 Epoch 13/20
669 16/16 - 0s - loss: 0.0034 - accuracy: 1.0000
670 Epoch 14/20
671 16/16 - 0s - loss: 0.0024 - accuracy: 1.0000
672 Epoch 15/20
673 16/16 - 0s - loss: 0.0022 - accuracy: 1.0000
674 Epoch 16/20
675 16/16 - 0s - loss: 0.0020 - accuracy: 1.0000
676 Epoch 17/20
677 16/16 - 0s - loss: 0.0018 - accuracy: 1.0000
678 Epoch 18/20
679 16/16 - 0s - loss: 0.0018 - accuracy: 1.0000
680 Epoch 19/20
681 16/16 - 0s - loss: 0.0016 - accuracy: 1.0000
682 Epoch 20/20
683 16/16 - 0s - loss: 0.0014 - accuracy: 1.0000
684
685 Training Stats of Location_dataset_6D:
686 Epoch 1/20
687 24/24 - 1s - loss: 0.3649 - accuracy: 0.8206 - false_positives: 61.0000 - false_negatives: 73.0000
688 Epoch 2/20
689 24/24 - 0s - loss: 0.2505 - accuracy: 0.9103 - false_positives: 67.0000 - false_negatives: 0.0000e+00
690 Epoch 3/20
691 24/24 - 0s - loss: 0.2417 - accuracy: 0.9157 - false_positives: 63.0000 - false_negatives: 0.0000e+00
692 Epoch 4/20
693 24/24 - 0s - loss: 0.2473 - accuracy: 0.9183 - false_positives: 61.0000 - false_negatives: 0.0000e+00
694 Epoch 5/20
695 24/24 - 0s - loss: 0.2349 - accuracy: 0.9170 - false_positives: 62.0000 - false_negatives: 0.0000e+00
696 Epoch 6/20
697 24/24 - 0s - loss: 0.2333 - accuracy: 0.9183 - false_positives: 61.0000 - false_negatives: 0.0000e+00
698 Epoch 7/20
699 24/24 - 0s - loss: 0.2326 - accuracy: 0.9197 - false_positives: 60.0000 - false_negatives: 0.0000e+00
700 Epoch 8/20
701 24/24 - 0s - loss: 0.2266 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
702 Epoch 9/20
703 24/24 - 0s - loss: 0.2244 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
704 Epoch 10/20
705 24/24 - 0s - loss: 0.2242 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
706 Epoch 11/20
707 24/24 - 0s - loss: 0.2187 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
708 Epoch 12/20
709 24/24 - 0s - loss: 0.2154 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
```

```
710 Epoch 13/20
711 24/24 - 0s - loss: 0.2042 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
712 Epoch 14/20
713 24/24 - 0s - loss: 0.2021 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
714 Epoch 15/20
715 24/24 - 0s - loss: 0.1964 - accuracy: 0.9210 - false_positives: 58.0000 - false_negatives: 1.0000
716 Epoch 16/20
717 24/24 - 0s - loss: 0.1891 - accuracy: 0.9250 - false_positives: 54.0000 - false_negatives: 2.0000
718 Epoch 17/20
719 24/24 - 0s - loss: 0.1769 - accuracy: 0.9264 - false_positives: 53.0000 - false_negatives: 2.0000
720 Epoch 18/20
721 24/24 - 0s - loss: 0.1637 - accuracy: 0.9264 - false_positives: 51.0000 - false_negatives: 4.0000
722 Epoch 19/20
723 24/24 - 0s - loss: 0.1677 - accuracy: 0.9304 - false_positives: 47.0000 - false_negatives: 5.0000
724 Epoch 20/20
725 24/24 - 0s - loss: 0.1700 - accuracy: 0.9384 - false_positives: 40.0000 - false_negatives: 6.0000
726
727 Model evaluations on test data set:
728 2/2 [=====] - 0s 1ms/step - loss: 0.9223 - accuracy: 0.7391
729 5/5 [=====] - 0s 724us/step - loss: 1.0264 - accuracy: 0.5000
730 3/3 [=====] - 0s 999us/step - loss: 0.4850 - accuracy: 0.7816
731 4/4 [=====] - 0s 998us/step - loss: 0.0069 - accuracy: 1.0000 - false_positives: 0.0000e+00 -
false_negatives: 0.0000e+00
732 5/5 [=====] - 0s 735us/step - loss: 1.4114 - accuracy: 0.5194 - false_positives: 2.0000 - false_negatives:
60.0000
733 4/4 [=====] - 0s 573us/step - loss: 0.1731 - accuracy: 0.9669
734 6/6 [=====] - 0s 599us/step - loss: 0.0010 - accuracy: 1.0000
735 8/8 [=====] - 0s 718us/step - loss: 0.1384 - accuracy: 0.9280 - false_positives: 13.0000 -
false_negatives: 5.0000
736
737 Hyperparameters for this run: Model1_Hidden:1_Neurons[20]_LR0.4_M0.7
738
739 Enter 1 for Gradient Descent, and 2 for RMSprop: 1
740 Enter number of hidden Layer for test: 1
741 Enter number of neurons for 1 hidden Layer: 20
742 Activation function for hidden Layer: relu
743 Enter learning rate for Gradient Descent: 0.95
744 Enter momentum for Gradient Descent: 0.9
745 Enter number of epochs (give 20): 20
746 Training Stats of dist_in_1_dataset_GD
747 Epoch 1/20
748 5/5 - 0s - loss: 1.1394 - accuracy: 0.3650
749 Epoch 2/20
```

```
750 5/5 - 0s - loss: 1.1162 - accuracy: 0.3796
751 Epoch 3/20
752 5/5 - 0s - loss: 1.1396 - accuracy: 0.4453
753 Epoch 4/20
754 5/5 - 0s - loss: 1.0728 - accuracy: 0.4453
755 Epoch 5/20
756 5/5 - 0s - loss: 1.1159 - accuracy: 0.3066
757 Epoch 6/20
758 5/5 - 0s - loss: 1.1005 - accuracy: 0.4453
759 Epoch 7/20
760 5/5 - 0s - loss: 1.0673 - accuracy: 0.4453
761 Epoch 8/20
762 5/5 - 0s - loss: 1.0960 - accuracy: 0.4453
763 Epoch 9/20
764 5/5 - 0s - loss: 1.1673 - accuracy: 0.3212
765 Epoch 10/20
766 5/5 - 0s - loss: 1.1336 - accuracy: 0.4453
767 Epoch 11/20
768 5/5 - 0s - loss: 1.0957 - accuracy: 0.3577
769 Epoch 12/20
770 5/5 - 0s - loss: 1.1106 - accuracy: 0.4453
771 Epoch 13/20
772 5/5 - 0s - loss: 1.0763 - accuracy: 0.4453
773 Epoch 14/20
774 5/5 - 0s - loss: 1.0760 - accuracy: 0.3577
775 Epoch 15/20
776 5/5 - 0s - loss: 1.0815 - accuracy: 0.4453
777 Epoch 16/20
778 5/5 - 0s - loss: 1.1120 - accuracy: 0.3358
779 Epoch 17/20
780 5/5 - 0s - loss: 1.1052 - accuracy: 0.4453
781 Epoch 18/20
782 5/5 - 0s - loss: 1.0912 - accuracy: 0.4453
783 Epoch 19/20
784 5/5 - 0s - loss: 1.0978 - accuracy: 0.4453
785 Epoch 20/20
786 5/5 - 0s - loss: 1.1128 - accuracy: 0.3796
787
788 Training Stats of dist_unknown_dataset_6D
789 Epoch 1/20
790 14/14 - 0s - loss: 1.1532 - accuracy: 0.4074
791 Epoch 2/20
792 14/14 - 0s - loss: 1.0611 - accuracy: 0.5000
```

793 Epoch 3/20
794 14/14 - 0s - loss: 1.1071 - accuracy: 0.4306
795 Epoch 4/20
796 14/14 - 0s - loss: 1.1007 - accuracy: 0.4699
797 Epoch 5/20
798 14/14 - 0s - loss: 1.0691 - accuracy: 0.4931
799 Epoch 6/20
800 14/14 - 0s - loss: 1.0398 - accuracy: 0.5069
801 Epoch 7/20
802 14/14 - 0s - loss: 1.0448 - accuracy: 0.4861
803 Epoch 8/20
804 14/14 - 0s - loss: 1.0723 - accuracy: 0.5069
805 Epoch 9/20
806 14/14 - 0s - loss: 1.0587 - accuracy: 0.5069
807 Epoch 10/20
808 14/14 - 0s - loss: 1.0934 - accuracy: 0.5069
809 Epoch 11/20
810 14/14 - 0s - loss: 1.1211 - accuracy: 0.4005
811 Epoch 12/20
812 14/14 - 0s - loss: 1.0441 - accuracy: 0.4815
813 Epoch 13/20
814 14/14 - 0s - loss: 1.0753 - accuracy: 0.4514
815 Epoch 14/20
816 14/14 - 0s - loss: 1.0480 - accuracy: 0.4676
817 Epoch 15/20
818 14/14 - 0s - loss: 1.1897 - accuracy: 0.3819
819 Epoch 16/20
820 14/14 - 0s - loss: 1.1825 - accuracy: 0.3819
821 Epoch 17/20
822 14/14 - 0s - loss: 1.0813 - accuracy: 0.4630
823 Epoch 18/20
824 14/14 - 0s - loss: 1.0490 - accuracy: 0.4954
825 Epoch 19/20
826 14/14 - 0s - loss: 1.1028 - accuracy: 0.4653
827 Epoch 20/20
828 14/14 - 0s - loss: 1.1781 - accuracy: 0.4028
829
830 Training Stats of dist_out_dataset_60
831 Epoch 1/20
832 9/9 - 0s - loss: 1.6184 - accuracy: 0.5194
833 Epoch 2/20
834 9/9 - 0s - loss: 1.1231 - accuracy: 0.4341
835 Epoch 3/20

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836 9/9 - 0s - loss: 1.1452 - accuracy: 0.3372
837 Epoch 4/20
838 9/9 - 0s - loss: 1.0725 - accuracy: 0.4612
839 Epoch 5/20
840 9/9 - 0s - loss: 1.1214 - accuracy: 0.4651
841 Epoch 6/20
842 9/9 - 0s - loss: 1.1318 - accuracy: 0.3256
843 Epoch 7/20
844 9/9 - 0s - loss: 1.1442 - accuracy: 0.4419
845 Epoch 8/20
846 9/9 - 0s - loss: 1.2292 - accuracy: 0.3372
847 Epoch 9/20
848 9/9 - 0s - loss: 1.1906 - accuracy: 0.4302
849 Epoch 10/20
850 9/9 - 0s - loss: 1.0600 - accuracy: 0.4767
851 Epoch 11/20
852 9/9 - 0s - loss: 1.1204 - accuracy: 0.4380
853 Epoch 12/20
854 9/9 - 0s - loss: 1.0860 - accuracy: 0.4341
855 Epoch 13/20
856 9/9 - 0s - loss: 1.1137 - accuracy: 0.3992
857 Epoch 14/20
858 9/9 - 0s - loss: 1.0737 - accuracy: 0.4147
859 Epoch 15/20
860 9/9 - 0s - loss: 1.0724 - accuracy: 0.3837
861 Epoch 16/20
862 9/9 - 0s - loss: 1.2206 - accuracy: 0.4225
863 Epoch 17/20
864 9/9 - 0s - loss: 1.0862 - accuracy: 0.3605
865 Epoch 18/20
866 9/9 - 0s - loss: 1.2994 - accuracy: 0.4419
867 Epoch 19/20
868 9/9 - 0s - loss: 1.1725 - accuracy: 0.4264
869 Epoch 20/20
870 9/9 - 0s - loss: 1.0434 - accuracy: 0.4612
871
872 Training Stats of presence_in_dataset_6D
873 Epoch 1/20
874 12/12 - 1s - loss: 0.7870 - accuracy: 0.5663 - false_positives: 93.0000 - false_negatives: 64.0000
875 Epoch 2/20
876 12/12 - 0s - loss: 0.6973 - accuracy: 0.5166 - false_positives: 86.0000 - false_negatives: 89.0000
877 Epoch 3/20
878 12/12 - 0s - loss: 0.7273 - accuracy: 0.4945 - false_positives: 106.0000 - false_negatives: 77.0000
```

879 Epoch 4/20
880 12/12 - 0s - loss: 0.7527 - accuracy: 0.4945 - false_positives: 90.0000 - false_negatives: 93.0000
881 Epoch 5/20
882 12/12 - 0s - loss: 0.7382 - accuracy: 0.4834 - false_positives: 92.0000 - false_negatives: 95.0000
883 Epoch 6/20
884 12/12 - 0s - loss: 0.7532 - accuracy: 0.4834 - false_positives: 124.0000 - false_negatives: 63.0000
885 Epoch 7/20
886 12/12 - 0s - loss: 0.6903 - accuracy: 0.5663 - false_positives: 157.0000 - false_negatives: 0.0000e+00
887 Epoch 8/20
888 12/12 - 0s - loss: 0.7048 - accuracy: 0.5331 - false_positives: 110.0000 - false_negatives: 59.0000
889 Epoch 9/20
890 12/12 - 0s - loss: 0.7373 - accuracy: 0.5000 - false_positives: 116.0000 - false_negatives: 65.0000
891 Epoch 10/20
892 12/12 - 0s - loss: 0.7166 - accuracy: 0.5110 - false_positives: 119.0000 - false_negatives: 58.0000
893 Epoch 11/20
894 12/12 - 0s - loss: 0.7015 - accuracy: 0.5276 - false_positives: 132.0000 - false_negatives: 39.0000
895 Epoch 12/20
896 12/12 - 0s - loss: 0.7066 - accuracy: 0.5110 - false_positives: 87.0000 - false_negatives: 90.0000
897 Epoch 13/20
898 12/12 - 0s - loss: 0.7055 - accuracy: 0.5387 - false_positives: 93.0000 - false_negatives: 74.0000
899 Epoch 14/20
900 12/12 - 0s - loss: 0.6971 - accuracy: 0.5663 - false_positives: 157.0000 - false_negatives: 0.0000e+00
901 Epoch 15/20
902 12/12 - 0s - loss: 0.6925 - accuracy: 0.5166 - false_positives: 134.0000 - false_negatives: 41.0000
903 Epoch 16/20
904 12/12 - 0s - loss: 0.6955 - accuracy: 0.5663 - false_positives: 157.0000 - false_negatives: 0.0000e+00
905 Epoch 17/20
906 12/12 - 0s - loss: 0.7632 - accuracy: 0.4945 - false_positives: 90.0000 - false_negatives: 93.0000
907 Epoch 18/20
908 12/12 - 0s - loss: 0.7194 - accuracy: 0.4724 - false_positives: 105.0000 - false_negatives: 86.0000
909 Epoch 19/20
910 12/12 - 0s - loss: 0.6998 - accuracy: 0.5276 - false_positives: 116.0000 - false_negatives: 55.0000
911 Epoch 20/20
912 12/12 - 0s - loss: 0.6931 - accuracy: 0.5276 - false_positives: 132.0000 - false_negatives: 39.0000
913 Training Stats of presence_out_dataset_GD
914 Training Stats of presence_out_dataset_GD
915 Epoch 1/20
916 13/13 - 1s - loss: 0.6817 - accuracy: 0.6545 - false_positives: 115.0000 - false_negatives: 18.0000
917 Epoch 2/20
918 13/13 - 0s - loss: 0.6830 - accuracy: 0.5844 - false_positives: 81.0000 - false_negatives: 79.0000
919 Epoch 3/20
920 13/13 - 0s - loss: 0.7519 - accuracy: 0.5662 - false_positives: 100.0000 - false_negatives: 67.0000
921 Epoch 4/20

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922 13/13 - 0s - loss: 0.6583 - accuracy: 0.6078 - false_positives: 108.0000 - false_negatives: 43.0000
923 Epoch 5/20
924 13/13 - 0s - loss: 0.8153 - accuracy: 0.5091 - false_positives: 79.0000 - false_negatives: 110.0000
925 Epoch 6/20
926 13/13 - 0s - loss: 0.6463 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
927 Epoch 7/20
928 13/13 - 0s - loss: 0.7103 - accuracy: 0.5455 - false_positives: 104.0000 - false_negatives: 71.0000
929 Epoch 8/20
930 13/13 - 0s - loss: 0.8247 - accuracy: 0.5351 - false_positives: 74.0000 - false_negatives: 105.0000
931 Epoch 9/20
932 13/13 - 0s - loss: 0.6711 - accuracy: 0.6078 - false_positives: 92.0000 - false_negatives: 59.0000
933 Epoch 10/20
934 13/13 - 0s - loss: 0.7834 - accuracy: 0.5506 - false_positives: 87.0000 - false_negatives: 86.0000
935 Epoch 11/20
936 13/13 - 0s - loss: 0.6615 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
937 Epoch 12/20
938 13/13 - 0s - loss: 0.7141 - accuracy: 0.5636 - false_positives: 100.0000 - false_negatives: 68.0000
939 Epoch 13/20
940 13/13 - 0s - loss: 0.6462 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
941 Epoch 14/20
942 13/13 - 0s - loss: 0.6536 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
943 Epoch 15/20
944 13/13 - 0s - loss: 0.6940 - accuracy: 0.5455 - false_positives: 129.0000 - false_negatives: 71.0000
945 Epoch 16/20
946 13/13 - 0s - loss: 0.6578 - accuracy: 0.6649 - false_positives: 129.0000 - false_negatives: 0.0000e+00
947 Epoch 17/20
948 13/13 - 0s - loss: 0.6814 - accuracy: 0.6649 - false_positives: 104.0000 - false_negatives: 128.0000 - false_negatives: 1.0000
949 Epoch 18/20
950 13/13 - 0s - loss: 0.6746 - accuracy: 0.6416 - false_positives: 116.0000 - false_negatives: 22.0000
951 Epoch 19/20
952 13/13 - 0s - loss: 0.6870 - accuracy: 0.6805 - false_positives: 122.0000 - false_negatives: 1.0000
953 Epoch 20/20
954 13/13 - 0s - loss: 0.6422 - accuracy: 0.6675 - false_positives: 115.0000 - false_negatives: 13.0000
955 Training Stats of qty_in_dataset_GD
956 Epoch 1/20
957 Epoch 12/12 - 0s - loss: 1.6415 - accuracy: 0.3867
958 Epoch 2/20
959 Epoch 12/12 - 0s - loss: 1.2239 - accuracy: 0.4365
960 Epoch 3/20
961 Epoch 12/12 - 0s - loss: 1.2070 - accuracy: 0.4171
962 Epoch 4/20
963 Epoch 12/12 - 0s - loss: 1.2095 - accuracy: 0.4282
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965 Epoch 5/20
966 12/12 - 0s - loss: 1.1979 - accuracy: 0.4199
967 Epoch 6/20
968 12/12 - 0s - loss: 1.2021 - accuracy: 0.4199
969 Epoch 7/20
970 12/12 - 0s - loss: 1.2368 - accuracy: 0.3398
971 Epoch 8/20
972 12/12 - 0s - loss: 1.2505 - accuracy: 0.4006
973 Epoch 9/20
974 12/12 - 0s - loss: 1.2215 - accuracy: 0.4144
975 Epoch 10/20
976 12/12 - 0s - loss: 1.2273 - accuracy: 0.4006
977 Epoch 11/20
978 12/12 - 0s - loss: 1.2364 - accuracy: 0.4088
979 Epoch 12/20
980 12/12 - 0s - loss: 1.2276 - accuracy: 0.3812
981 Epoch 13/20
982 12/12 - 0s - loss: 1.2128 - accuracy: 0.4088
983 Epoch 14/20
984 12/12 - 0s - loss: 1.2610 - accuracy: 0.3895
985 Epoch 15/20
986 12/12 - 0s - loss: 1.2260 - accuracy: 0.4088
987 Epoch 16/20
988 12/12 - 0s - loss: 1.2135 - accuracy: 0.3867
989 Epoch 17/20
990 12/12 - 0s - loss: 1.2133 - accuracy: 0.4337
991 Epoch 18/20
992 12/12 - 0s - loss: 1.2302 - accuracy: 0.3895
993 Epoch 19/20
994 12/12 - 0s - loss: 1.2120 - accuracy: 0.4144
995 Epoch 20/20
996 12/12 - 0s - loss: 1.2422 - accuracy: 0.3895
997
998 Training Stats of qty_unknown_dataset_6D
999 Epoch 1/20
1000 16/16 - 0s - loss: 1.3576 - accuracy: 0.6148
1001 Epoch 2/20
1002 16/16 - 0s - loss: 1.8115 - accuracy: 0.4890
1003 Epoch 3/20
1004 16/16 - 0s - loss: 1.5258 - accuracy: 0.3533
1005 Epoch 4/20
1006 16/16 - 0s - loss: 1.1633 - accuracy: 0.3573
1007 Epoch 5/20
```

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1008 16/16 - 0s - loss: 1.1175 - accuracy: 0.4072
1009 Epoch 6/20
1010 16/16 - 0s - loss: 1.0988 - accuracy: 0.3673
1011 Epoch 7/20
1012 16/16 - 0s - loss: 1.0789 - accuracy: 0.4251
1013 Epoch 8/20
1014 16/16 - 0s - loss: 1.0918 - accuracy: 0.3792
1015 Epoch 9/20
1016 16/16 - 0s - loss: 1.1166 - accuracy: 0.4192
1017 Epoch 10/20
1018 16/16 - 0s - loss: 1.1256 - accuracy: 0.3892
1019 Epoch 11/20
1020 16/16 - 0s - loss: 1.1226 - accuracy: 0.3733
1021 Epoch 12/20
1022 16/16 - 0s - loss: 1.1297 - accuracy: 0.3912
1023 Epoch 13/20
1024 16/16 - 0s - loss: 1.1497 - accuracy: 0.3313
1025 Epoch 14/20
1026 16/16 - 0s - loss: 1.1499 - accuracy: 0.3792
1027 Epoch 15/20
1028 16/16 - 0s - loss: 1.0906 - accuracy: 0.4232
1029 Epoch 16/20
1030 16/16 - 0s - loss: 1.0971 - accuracy: 0.3852
1031 Epoch 17/20
1032 16/16 - 0s - loss: 1.1052 - accuracy: 0.3573
1033 Epoch 18/20
1034 16/16 - 0s - loss: 1.1002 - accuracy: 0.3792
1035 Epoch 19/20
1036 16/16 - 0s - loss: 1.0963 - accuracy: 0.3772
1037 Epoch 20/20
1038 16/16 - 0s - loss: 1.1377 - accuracy: 0.3533
1039

1040 Training Stats of location_dataset_GD:
1041 Epoch 1/20
1042 24/24 - 1s - loss: 0.3926 - accuracy: 0.8407 - false_positives: 79.0000 - false_negatives: 40.0000
1043 Epoch 2/20
1044 24/24 - 0s - loss: 0.2493 - accuracy: 0.9157 - false_positives: 63.0000 - false_negatives: 0.0000e+00
1045 Epoch 3/20
1046 24/24 - 0s - loss: 0.2378 - accuracy: 0.9170 - false_positives: 62.0000 - false_negatives: 0.0000e+00
1047 Epoch 4/20
1048 24/24 - 0s - loss: 0.2356 - accuracy: 0.9197 - false_positives: 60.0000 - false_negatives: 0.0000e+00
1049 Epoch 5/20
1050 24/24 - 0s - loss: 0.2312 - accuracy: 0.9197 - false_positives: 60.0000 - false_negatives: 0.0000e+00
```

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1051 Epoch 6/20
1052 24/24 - 0s - loss: 0.2306 - accuracy: 0.9210 - false_positives: 59.0000 - false_negatives: 0.0000e+00
1053 Epoch 7/20
1054 24/24 - 0s - loss: 0.2274 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1055 Epoch 8/20
1056 24/24 - 0s - loss: 0.2293 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1057 Epoch 9/20
1058 24/24 - 0s - loss: 0.2273 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1059 Epoch 10/20
1060 24/24 - 0s - loss: 0.2386 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1061 Epoch 11/20
1062 24/24 - 0s - loss: 0.2309 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1063 Epoch 12/20
1064 24/24 - 0s - loss: 0.2283 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1065 Epoch 13/20
1066 24/24 - 0s - loss: 0.2327 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1067 Epoch 14/20
1068 24/24 - 0s - loss: 0.2299 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1069 Epoch 15/20
1070 24/24 - 0s - loss: 0.2277 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1071 Epoch 16/20
1072 24/24 - 0s - loss: 0.2320 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1073 Epoch 17/20
1074 24/24 - 0s - loss: 0.2414 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1075 Epoch 18/20
1076 24/24 - 0s - loss: 0.2317 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1077 Epoch 19/20
1078 24/24 - 0s - loss: 0.2272 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1079 Epoch 20/20
1080 24/24 - 0s - loss: 0.2325 - accuracy: 0.9224 - false_positives: 58.0000 - false_negatives: 0.0000e+00
1081
1082 Model evaluations on test data set:
1083 2/2 [=====] - 0s 997us/step - loss: 1.0696 - accuracy: 0.4783
1084 5/5 [=====] - 0s 749us/step - loss: 1.1210 - accuracy: 0.5000
1085 3/3 [=====] - 0s 1ms/step - loss: 1.1517 - accuracy: 0.3448
1086 4/4 [=====] - 0s 998us/step - loss: 0.7111 - accuracy: 0.5620 - false_positives: 53.0000 -
false_negatives: 0.0000e+00
1087 5/5 [=====] - 0s 716us/step - loss: 0.6197 - accuracy: 0.6899 - false_positives: 40.0000 -
false_negatives: 0.0000e+00
1088 4/4 [=====] - 0s 670us/step - loss: 1.1332 - accuracy: 0.4380
1089 6/6 [=====] - 0s 605us/step - loss: 1.1142 - accuracy: 0.1726
1090 8/8 [=====] - 0s 777us/step - loss: 0.2054 - accuracy: 0.9360 - false_positives: 16.0000 -
false_negatives: 0.0000e+00

```

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1091
1092 Hyperparameters for this run: Model1_Hidden:1_Neurons[20]_LR0.95_M0.9
1093
1094 Accuracy of all tests in- Gradient_hiddenLayers_neuronsList_LearningRate_Momentum:
1095
1096 GD_1_[20]_0.09_0.4 GD_1_[20]_0.4_0.7 GD_1_[20]_0.95_0.9
1097 Dataset N0
1098 0 0.826087 0.739130 0.478261
1099 1 0.986111 0.500000 0.500000
1100 2 0.804598 0.781609 0.344828
1101 3 0.991736 1.000000 0.561983
1102 4 0.689922 0.519380 0.689922
1103 5 0.975207 0.966942 0.438017
1104 6 1.000000 1.000000 0.172619
1105 7 0.932000 0.928000 0.936000
1106
1107 GD_1_[20]_0.09_0.4 GD_1_[20]_0.4_0.7 GD_1_[20]_0.95_0.9
1108 count 8.000000 8.000000 8.000000
1109 mean 0.900708 0.804383 0.515204
1110 std 0.114145 0.205944 0.227951
1111 min 0.689922 0.500000 0.172619
1112 25% 0.820715 0.684193 0.414719
1113 50% 0.953603 0.854805 0.489130
1114 75% 0.987517 0.975207 0.593968
1115 max 1.000000 1.000000 0.936000
1116
1117 Shapiro test
1118 GD_1_[20]_0.09_0.4 stats=0.8429, p=0.0807
1119 GD_1_[20]_0.4_0.7 stats=0.8512, p=0.0980
1120 GD_1_[20]_0.95_0.9 stats=0.9700, p=0.8979
1121 GD_1_[20]_0.09_0.4 stats=0.8429, p=0.0807
1122 GD_1_[20]_0.4_0.7 stats=0.8512, p=0.0980
1123 GD_1_[20]_0.95_0.9 stats=0.9700, p=0.8979
1124 GD_1_[20]_0.09_0.4 stats=0.8429, p=0.0807
1125 GD_1_[20]_0.4_0.7 stats=0.8512, p=0.0980
1126 GD_1_[20]_0.95_0.9 stats=0.9700, p=0.8979
1127
1128 ANOVA test
1129 sum_sq df F PR(>F)
1130 experiment1.iiloc[:, 1] 0.026801 1.0 2.244471 0.194363
1131 experiment1.iiloc[:, 2] 0.001518 1.0 0.127100 0.736009
1132 Residual 0.059705 5.0 NaN NaN
1133

```

```
1134 t-tests
1135 Ttest_indResult(statistic=1.1570799048573417, pvalue=0.27190198554674494)
1136 Ttest_indResult(statistic=2.6624675636127013, pvalue=0.018699576198194567)
1137 Ttest_indResult(statistic=4.277088769096883, pvalue=0.001512888793784677)
1138
1139 Statistically better mean available
1140
1141 Process finished with exit code 0
1142
```