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1 Create scene
2 Start data processing
3 Generating data
4 Done generating data
5 Generating training examples
6 Ending data processing...
7 End data processing
8
9 Search: Running Trial #1
10
11 Value          | Best Value So Far | Hyperparameter
12 2              | 2                  | num_layers
13 32             | 32                 | layer_1_units
14 0.3            | 0.3                | dropout
15
16 Epoch 1/100
17 12000/12000 [=====] - 44s
   3ms/step - loss: 7500.1709 - val_loss: 264.3796
18 Epoch 2/100
19 12000/12000 [=====] - 42s
   4ms/step - loss: 30.0948 - val_loss: 12.9233
20 Epoch 3/100
21 12000/12000 [=====] - 42s
   3ms/step - loss: 12.4981 - val_loss: 10.6111
22 Epoch 4/100
23 12000/12000 [=====] - 41s
   3ms/step - loss: 10.4105 - val_loss: 9.8753
24 Epoch 5/100
25 12000/12000 [=====] - 41s
   3ms/step - loss: 9.4301 - val_loss: 9.1166
26 Epoch 6/100
27 12000/12000 [=====] - 41s
   3ms/step - loss: 9.2023 - val_loss: 9.0379
28 Epoch 7/100
29 12000/12000 [=====] - 42s
   3ms/step - loss: 9.1816 - val_loss: 9.0622
30 Epoch 8/100
31 12000/12000 [=====] - 41s
   3ms/step - loss: 9.1680 - val_loss: 9.0125
32 Epoch 9/100
33 12000/12000 [=====] - 41s
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33 3ms/step - loss: 9.1619 - val_loss: 9.0229
34 Epoch 10/100
35 12000/12000 [=====] - 41s
    3ms/step - loss: 9.1504 - val_loss: 9.0481
36 Epoch 11/100
37 12000/12000 [=====] - 42s
    3ms/step - loss: 9.1463 - val_loss: 9.0201
38 Trial 1 Complete [00h 07m 40s]
39 val_loss: 9.012451171875
40
41 Best val_loss So Far: 9.012451171875
42 Total elapsed time: 00h 07m 40s
43
44 Search: Running Trial #2
45
46 Value          | Best Value So Far | Hyperparameter
47 1              | 2                  | num_layers
48 64             | 32                 | layer_1_units
49 0              | 0.3                | dropout
50 32             | 16                 | layer_2_units
51
52 Epoch 1/100
53 12000/12000 [=====] - 52s
    4ms/step - loss: 1954.6309 - val_loss: 12.9177
54 Epoch 2/100
55 12000/12000 [=====] - 49s
    4ms/step - loss: 12.8286 - val_loss: 10.5284
56 Epoch 3/100
57 12000/12000 [=====] - 49s
    4ms/step - loss: 9.5518 - val_loss: 9.0965
58 Epoch 4/100
59 12000/12000 [=====] - 50s
    4ms/step - loss: 9.0822 - val_loss: 9.0293
60 Epoch 5/100
61 12000/12000 [=====] - 50s
    4ms/step - loss: 9.0677 - val_loss: 9.0406
62 Epoch 6/100
63 12000/12000 [=====] - 50s
    4ms/step - loss: 9.0617 - val_loss: 9.0821
64 Epoch 7/100
65 12000/12000 [=====] - 49s
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65 4ms/step - loss: 9.0605 - val_loss: 9.0009
66 Epoch 8/100
67 12000/12000 [=====] - 49s
    4ms/step - loss: 9.0553 - val_loss: 9.0345
68 Epoch 9/100
69 12000/12000 [=====] - 49s
    4ms/step - loss: 9.0518 - val_loss: 9.0017
70 Epoch 10/100
71 12000/12000 [=====] - 49s
    4ms/step - loss: 9.0442 - val_loss: 9.0539
72 Trial 2 Complete [00h 08m 18s]
73 val_loss: 9.00086498260498
74
75 Best val_loss So Far: 9.00086498260498
76 Total elapsed time: 00h 15m 57s
77
78 Search: Running Trial #3
79
80 Value          |Best Value So Far |Hyperparameter
81 3              |1                  |num_layers
82 16             |64                 |layer_1_units
83 0.2            |0                  |dropout
84 16             |32                 |layer_2_units
85
86 Epoch 1/100
87 12000/12000 [=====] - 58s
    5ms/step - loss: 7319.9429 - val_loss: 223.1670
88 Epoch 2/100
89 12000/12000 [=====] - 54s
    5ms/step - loss: 26.5195 - val_loss: 12.9207
90 Epoch 3/100
91 12000/12000 [=====] - 54s
    4ms/step - loss: 12.9179 - val_loss: 12.9169
92 Epoch 4/100
93 12000/12000 [=====] - 54s
    4ms/step - loss: 12.9171 - val_loss: 12.9134
94 Epoch 5/100
95 12000/12000 [=====] - 54s
    4ms/step - loss: 11.9341 - val_loss: 10.4578
96 Epoch 6/100
97 12000/12000 [=====] - 54s
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97 4ms/step - loss: 10.6553 - val_loss: 10.2461
98 Epoch 7/100
99 12000/12000 [=====] - 54s
    4ms/step - loss: 10.4465 - val_loss: 10.0253
100 Epoch 8/100
101 12000/12000 [=====] - 54s
    4ms/step - loss: 9.8274 - val_loss: 9.1547
102 Epoch 9/100
103 12000/12000 [=====] - 53s
    4ms/step - loss: 9.5113 - val_loss: 9.0827
104 Epoch 10/100
105 12000/12000 [=====] - 53s
    4ms/step - loss: 9.4553 - val_loss: 9.1905
106 Epoch 11/100
107 12000/12000 [=====] - 54s
    4ms/step - loss: 9.4102 - val_loss: 9.1084
108 Epoch 12/100
109 12000/12000 [=====] - 54s
    4ms/step - loss: 9.3640 - val_loss: 9.0487
110 Epoch 13/100
111 12000/12000 [=====] - 54s
    4ms/step - loss: 9.3125 - val_loss: 9.0441
112 Epoch 14/100
113 12000/12000 [=====] - 54s
    4ms/step - loss: 9.2983 - val_loss: 9.3029
114 Epoch 15/100
115 12000/12000 [=====] - 54s
    4ms/step - loss: 9.2839 - val_loss: 9.0361
116 Epoch 16/100
117 12000/12000 [=====] - 53s
    4ms/step - loss: 9.2778 - val_loss: 9.0401
118 Epoch 17/100
119 12000/12000 [=====] - 54s
    4ms/step - loss: 9.2741 - val_loss: 9.0191
120 Epoch 18/100
121 12000/12000 [=====] - 54s
    5ms/step - loss: 9.2619 - val_loss: 9.0646
122 Epoch 19/100
123 12000/12000 [=====] - 54s
    4ms/step - loss: 9.2645 - val_loss: 9.1739
124 Epoch 20/100
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125 12000/12000 [=====] - 54s
    4ms/step - loss: 9.2548 - val_loss: 9.0317
126 Trial 3 Complete [00h 17m 59s]
127 val_loss: 9.019142150878906
128
129 Best val_loss So Far: 9.00086498260498
130 Total elapsed time: 00h 33m 56s
131
132 Search: Running Trial #4
133
134 Value          | Best Value So Far | Hyperparameter
135 1              | 1                  | num_layers
136 64             | 64                 | layer_1_units
137 0.3            | 0                  | dropout
138 64             | 32                 | layer_2_units
139 16             | None                | layer_3_units
140
141 Epoch 1/100
142 12000/12000 [=====] - 54s
    4ms/step - loss: 1929.8336 - val_loss: 12.9455
143 Epoch 2/100
144 12000/12000 [=====] - 51s
    4ms/step - loss: 12.9325 - val_loss: 12.9328
145 Epoch 3/100
146 12000/12000 [=====] - 51s
    4ms/step - loss: 10.4054 - val_loss: 9.1260
147 Epoch 4/100
148 12000/12000 [=====] - 51s
    4ms/step - loss: 9.2182 - val_loss: 9.0681
149 Epoch 5/100
150 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1745 - val_loss: 9.1511
151 Epoch 6/100
152 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1480 - val_loss: 9.0420
153 Epoch 7/100
154 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1377 - val_loss: 9.0906
155 Epoch 8/100
156 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1275 - val_loss: 9.0301
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157 Epoch 9/100
158 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1266 - val_loss: 9.1071
159 Epoch 10/100
160 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1176 - val_loss: 9.0651
161 Epoch 11/100
162 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1127 - val_loss: 9.0203
163 Epoch 12/100
164 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1087 - val_loss: 9.0423
165 Epoch 13/100
166 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1076 - val_loss: 9.0283
167 Epoch 14/100
168 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1040 - val_loss: 9.0855
169 Trial 4 Complete [00h 11m 54s]
170 val_loss: 9.020328521728516
171
172 Best val_loss So Far: 9.00086498260498
173 Total elapsed time: 00h 45m 51s
174
175 Search: Running Trial #5
176
177 Value          |Best Value So Far |Hyperparameter
178 1              |1                  |num_layers
179 32             |64                 |layer_1_units
180 0.3            |0                  |dropout
181 64             |32                 |layer_2_units
182 128            |None                |layer_3_units
183
184 Epoch 1/100
185 12000/12000 [=====] - 47s
    4ms/step - loss: 3805.7488 - val_loss: 12.9204
186 Epoch 2/100
187 12000/12000 [=====] - 44s
    4ms/step - loss: 12.9215 - val_loss: 12.9172
188 Epoch 3/100
189 12000/12000 [=====] - 44s
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189 4ms/step - loss: 11.5353 - val_loss: 10.2856
190 Epoch 4/100
191 12000/12000 [=====] - 44s
    4ms/step - loss: 9.6289 - val_loss: 9.0762
192 Epoch 5/100
193 12000/12000 [=====] - 44s
    4ms/step - loss: 9.2539 - val_loss: 9.0400
194 Epoch 6/100
195 12000/12000 [=====] - 44s
    4ms/step - loss: 9.2117 - val_loss: 9.0296
196 Epoch 7/100
197 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1942 - val_loss: 9.0200
198 Epoch 8/100
199 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1777 - val_loss: 9.0148
200 Epoch 9/100
201 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1720 - val_loss: 9.0106
202 Epoch 10/100
203 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1699 - val_loss: 9.0339
204 Epoch 11/100
205 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1622 - val_loss: 9.0285
206 Epoch 12/100
207 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1541 - val_loss: 9.0391
208 Trial 5 Complete [00h 08m 47s]
209 val_loss: 9.010590553283691
210
211 Best val_loss So Far: 9.00086498260498
212 Total elapsed time: 00h 54m 38s
213
214 Search: Running Trial #6
215
216 Value          | Best Value So Far | Hyperparameter
217 1              | 1                  | num_layers
218 128            | 64                 | layer_1_units
219 0              | 0                  | dropout
220 16             | 32                 | layer_2_units
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221 32 |None |layer_3_units
222
223 Epoch 1/100
224 12000/12000 [=====] - 99s
    8ms/step - loss: 935.9998 - val_loss: 12.9395
225 Epoch 2/100
226 12000/12000 [=====] - 97s
    8ms/step - loss: 12.9450 - val_loss: 12.9116
227 Epoch 3/100
228 12000/12000 [=====] - 97s
    8ms/step - loss: 9.8968 - val_loss: 9.0361
229 Epoch 4/100
230 12000/12000 [=====] - 97s
    8ms/step - loss: 9.1056 - val_loss: 9.0404
231 Epoch 5/100
232 12000/12000 [=====] - 98s
    8ms/step - loss: 9.0892 - val_loss: 9.0637
233 Epoch 6/100
234 12000/12000 [=====] - 97s
    8ms/step - loss: 9.0878 - val_loss: 9.0657
235 Trial 6 Complete [00h 09m 44s]
236 val_loss: 9.036078453063965
237
238 Best val_loss So Far: 9.00086498260498
239 Total elapsed time: 01h 04m 22s
240
241 Search: Running Trial #7
242
243 Value |Best Value So Far |Hyperparameter
244 3 |1 |num_layers
245 64 |64 |layer_1_units
246 0.2 |0 |dropout
247 32 |32 |layer_2_units
248 16 |None |layer_3_units
249
250 Epoch 1/100
251 12000/12000 [=====] - 68s
    5ms/step - loss: 7474.2925 - val_loss: 247.9839
252 Epoch 2/100
253 12000/12000 [=====] - 63s
    5ms/step - loss: 28.6301 - val_loss: 12.9172

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254 Epoch 3/100
255 12000/12000 [=====] - 64s
    5ms/step - loss: 12.9180 - val_loss: 12.9170
256 Epoch 4/100
257 12000/12000 [=====] - 63s
    5ms/step - loss: 12.7650 - val_loss: 10.7749
258 Epoch 5/100
259 12000/12000 [=====] - 64s
    5ms/step - loss: 10.6007 - val_loss: 10.5381
260 Epoch 6/100
261 12000/12000 [=====] - 63s
    5ms/step - loss: 9.8515 - val_loss: 9.1578
262 Epoch 7/100
263 12000/12000 [=====] - 64s
    5ms/step - loss: 9.2193 - val_loss: 9.0449
264 Epoch 8/100
265 12000/12000 [=====] - 63s
    5ms/step - loss: 9.1701 - val_loss: 9.0336
266 Epoch 9/100
267 12000/12000 [=====] - 64s
    5ms/step - loss: 9.1567 - val_loss: 9.0284
268 Epoch 10/100
269 12000/12000 [=====] - 63s
    5ms/step - loss: 9.1413 - val_loss: 9.0378
270 Epoch 11/100
271 12000/12000 [=====] - 63s
    5ms/step - loss: 9.1349 - val_loss: 9.0044
272 Epoch 12/100
273 12000/12000 [=====] - 64s
    5ms/step - loss: 9.1324 - val_loss: 9.0217
274 Epoch 13/100
275 12000/12000 [=====] - 64s
    5ms/step - loss: 9.1221 - val_loss: 9.0345
276 Epoch 14/100
277 12000/12000 [=====] - 64s
    5ms/step - loss: 9.1219 - val_loss: 8.9977
278 Epoch 15/100
279 12000/12000 [=====] - 63s
    5ms/step - loss: 9.1150 - val_loss: 9.0145
280 Epoch 16/100
281 12000/12000 [=====] - 63s
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281 5ms/step - loss: 9.1119 - val_loss: 8.9919
282 Epoch 17/100
283 12000/12000 [=====] - 64s
    5ms/step - loss: 9.1096 - val_loss: 9.0145
284 Epoch 18/100
285 12000/12000 [=====] - 63s
    5ms/step - loss: 9.1019 - val_loss: 9.0310
286 Epoch 19/100
287 12000/12000 [=====] - 63s
    5ms/step - loss: 9.1015 - val_loss: 9.0059
288 Trial 7 Complete [00h 20m 11s]
289 val_loss: 8.991868019104004
290
291 Best val_loss So Far: 8.991868019104004
292 Total elapsed time: 01h 24m 33s
293
294 Search: Running Trial #8
295
296 Value          |Best Value So Far |Hyperparameter
297 2              |3                  |num_layers
298 128             |64                 |layer_1_units
299 0.2             |0.2                |dropout
300 32              |32                 |layer_2_units
301 128             |16                 |layer_3_units
302
303 Epoch 1/100
304 12000/12000 [=====] - 72s
    6ms/step - loss: 3966.8823 - val_loss: 12.9161
305 Epoch 2/100
306 12000/12000 [=====] - 69s
    6ms/step - loss: 12.9221 - val_loss: 12.9197
307 Epoch 3/100
308 12000/12000 [=====] - 69s
    6ms/step - loss: 12.9230 - val_loss: 12.9246
309 Epoch 4/100
310 12000/12000 [=====] - 69s
    6ms/step - loss: 11.1869 - val_loss: 10.3468
311 Epoch 5/100
312 12000/12000 [=====] - 69s
    6ms/step - loss: 9.5488 - val_loss: 9.1470
313 Epoch 6/100
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314 12000/12000 [=====] - 69s
    6ms/step - loss: 9.2233 - val_loss: 9.0305
315 Epoch 7/100
316 12000/12000 [=====] - 70s
    6ms/step - loss: 9.1903 - val_loss: 9.0902
317 Epoch 8/100
318 12000/12000 [=====] - 69s
    6ms/step - loss: 9.1608 - val_loss: 9.0413
319 Epoch 9/100
320 12000/12000 [=====] - 69s
    6ms/step - loss: 9.1469 - val_loss: 9.0624
321 Trial 8 Complete [00h 10m 25s]
322 val_loss: 9.03048324584961
323
324 Best val_loss So Far: 8.991868019104004
325 Total elapsed time: 01h 34m 58s
326
327 Search: Running Trial #9
328
329 Value | Best Value So Far | Hyperparameter
330 2 | 3 | num_layers
331 16 | 64 | layer_1_units
332 0.2 | 0.2 | dropout
333 32 | 32 | layer_2_units
334 128 | 16 | layer_3_units
335
336 Epoch 1/100
337 12000/12000 [=====] - 43s
    3ms/step - loss: 3794.1238 - val_loss: 12.9171
338 Epoch 2/100
339 12000/12000 [=====] - 41s
    3ms/step - loss: 12.9204 - val_loss: 12.7729
340 Epoch 3/100
341 12000/12000 [=====] - 41s
    3ms/step - loss: 10.4580 - val_loss: 9.4961
342 Epoch 4/100
343 12000/12000 [=====] - 41s
    3ms/step - loss: 9.3557 - val_loss: 9.0495
344 Epoch 5/100
345 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2500 - val_loss: 9.0314
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346 Epoch 6/100
347 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2329 - val_loss: 9.0472
348 Epoch 7/100
349 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2158 - val_loss: 9.2481
350 Epoch 8/100
351 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2134 - val_loss: 9.0628
352 Trial 9 Complete [00h 05m 29s]
353 val_loss: 9.031418800354004
354
355 Best val_loss So Far: 8.991868019104004
356 Total elapsed time: 01h 40m 28s
357
358 Search: Running Trial #10
359
360 Value          | Best Value So Far | Hyperparameter
361 2              | 3                  | num_layers
362 128             | 64                 | layer_1_units
363 0              | 0.2                | dropout
364 32             | 32                 | layer_2_units
365 64             | 16                 | layer_3_units
366
367 Epoch 1/100
368 12000/12000 [=====] - 70s
    6ms/step - loss: 3901.8257 - val_loss: 12.9227
369 Epoch 2/100
370 12000/12000 [=====] - 67s
    6ms/step - loss: 12.9197 - val_loss: 12.9217
371 Epoch 3/100
372 12000/12000 [=====] - 67s
    6ms/step - loss: 11.9501 - val_loss: 11.2165
373 Epoch 4/100
374 12000/12000 [=====] - 67s
    6ms/step - loss: 9.7008 - val_loss: 9.0706
375 Epoch 5/100
376 12000/12000 [=====] - 67s
    6ms/step - loss: 9.1271 - val_loss: 9.0231
377 Epoch 6/100
378 12000/12000 [=====] - 68s
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378 6ms/step - loss: 9.0911 - val_loss: 9.2459
379 Epoch 7/100
380 12000/12000 [=====] - 67s
    6ms/step - loss: 9.0879 - val_loss: 8.9970
381 Epoch 8/100
382 12000/12000 [=====] - 67s
    6ms/step - loss: 9.0749 - val_loss: 9.1746
383 Epoch 9/100
384 12000/12000 [=====] - 67s
    6ms/step - loss: 9.0663 - val_loss: 9.0004
385 Epoch 10/100
386 12000/12000 [=====] - 67s
    6ms/step - loss: 9.0610 - val_loss: 9.1109
387 Trial 10 Complete [00h 11m 16s]
388 val_loss: 8.996956825256348
389
390 Best val_loss So Far: 8.991868019104004
391 Total elapsed time: 01h 51m 44s
392
393 Search: Running Trial #11
394
395 Value          |Best Value So Far |Hyperparameter
396 3              |3                  |num_layers
397 64             |64                 |layer_1_units
398 0.2            |0.2                |dropout
399 64             |32                 |layer_2_units
400 128            |16                 |layer_3_units
401
402 Epoch 1/100
403 12000/12000 [=====] - 102s
    8ms/step - loss: 929.5208 - val_loss: 12.9221
404 Epoch 2/100
405 12000/12000 [=====] - 97s
    8ms/step - loss: 12.8488 - val_loss: 12.2013
406 Epoch 3/100
407 12000/12000 [=====] - 97s
    8ms/step - loss: 10.3656 - val_loss: 9.2341
408 Epoch 4/100
409 12000/12000 [=====] - 97s
    8ms/step - loss: 9.2779 - val_loss: 9.1981
410 Epoch 5/100
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411 12000/12000 [=====] - 97s
    8ms/step - loss: 9.2229 - val_loss: 9.0344
412 Epoch 6/100
413 12000/12000 [=====] - 97s
    8ms/step - loss: 9.2028 - val_loss: 9.0665
414 Epoch 7/100
415 12000/12000 [=====] - 98s
    8ms/step - loss: 9.1836 - val_loss: 9.1274
416 Epoch 8/100
417 12000/12000 [=====] - 97s
    8ms/step - loss: 9.1776 - val_loss: 9.3755
418 Trial 11 Complete [00h 13m 02s]
419 val_loss: 9.034422874450684
420
421 Best val_loss So Far: 8.991868019104004
422 Total elapsed time: 02h 04m 45s
423
424 Search: Running Trial #12
425
426 Value | Best Value So Far | Hyperparameter
427 1 | 3 | num_layers
428 32 | 64 | layer_1_units
429 0.3 | 0.2 | dropout
430 32 | 32 | layer_2_units
431 128 | 16 | layer_3_units
432
433 Epoch 1/100
434 12000/12000 [=====] - 46s
    4ms/step - loss: 3910.0273 - val_loss: 12.9175
435 Epoch 2/100
436 12000/12000 [=====] - 43s
    4ms/step - loss: 12.9208 - val_loss: 12.9166
437 Epoch 3/100
438 12000/12000 [=====] - 44s
    4ms/step - loss: 10.7556 - val_loss: 10.0824
439 Epoch 4/100
440 12000/12000 [=====] - 43s
    4ms/step - loss: 9.4102 - val_loss: 9.0788
441 Epoch 5/100
442 12000/12000 [=====] - 43s
    4ms/step - loss: 9.2026 - val_loss: 9.2061
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443 Epoch 6/100
444 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1828 - val_loss: 9.0728
445 Epoch 7/100
446 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1689 - val_loss: 9.0364
447 Epoch 8/100
448 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1665 - val_loss: 9.0201
449 Epoch 9/100
450 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1558 - val_loss: 9.1779
451 Epoch 10/100
452 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1488 - val_loss: 9.0102
453 Epoch 11/100
454 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1498 - val_loss: 9.1465
455 Epoch 12/100
456 12000/12000 [=====] - 43s
    4ms/step - loss: 9.1469 - val_loss: 9.0155
457 Epoch 13/100
458 12000/12000 [=====] - 44s
    4ms/step - loss: 9.1424 - val_loss: 9.1043
459 Trial 12 Complete [00h 09m 28s]
460 val_loss: 9.010231971740723
461
462 Best val_loss So Far: 8.991868019104004
463 Total elapsed time: 02h 14m 14s
464
465 Search: Running Trial #13
466
467 Value          | Best Value So Far | Hyperparameter
468 2              | 3                  | num_layers
469 64             | 64                 | layer_1_units
470 0.2            | 0.2                | dropout
471 32             | 32                 | layer_2_units
472 32             | 16                 | layer_3_units
473
474 Epoch 1/100
475 12000/12000 [=====] - 51s
```

```
475 4ms/step - loss: 3852.9336 - val_loss: 12.9215
476 Epoch 2/100
477 12000/12000 [=====] - 48s
    4ms/step - loss: 12.9213 - val_loss: 12.9451
478 Epoch 3/100
479 12000/12000 [=====] - 48s
    4ms/step - loss: 11.1222 - val_loss: 10.2347
480 Epoch 4/100
481 12000/12000 [=====] - 48s
    4ms/step - loss: 9.3962 - val_loss: 9.0846
482 Epoch 5/100
483 12000/12000 [=====] - 48s
    4ms/step - loss: 9.1492 - val_loss: 9.0397
484 Epoch 6/100
485 12000/12000 [=====] - 48s
    4ms/step - loss: 9.1244 - val_loss: 9.1429
486 Epoch 7/100
487 12000/12000 [=====] - 47s
    4ms/step - loss: 9.1035 - val_loss: 9.2168
488 Epoch 8/100
489 12000/12000 [=====] - 48s
    4ms/step - loss: 9.0934 - val_loss: 8.9980
490 Epoch 9/100
491 12000/12000 [=====] - 53s
    4ms/step - loss: 9.0909 - val_loss: 9.0104
492 Epoch 10/100
493 12000/12000 [=====] - 61s
    5ms/step - loss: 9.0799 - val_loss: 9.0361
494 Epoch 11/100
495 12000/12000 [=====] - 60s
    5ms/step - loss: 9.0735 - val_loss: 8.9918
496 Epoch 12/100
497 12000/12000 [=====] - 55s
    5ms/step - loss: 9.0728 - val_loss: 9.0203
498 Epoch 13/100
499 12000/12000 [=====] - 66s
    6ms/step - loss: 9.0672 - val_loss: 9.0200
500 Epoch 14/100
501 12000/12000 [=====] - 63s
    5ms/step - loss: 9.0634 - val_loss: 9.1293
502 Trial 13 Complete [00h 12m 23s]
```

```
503 val_loss: 8.991840362548828
504
505 Best val_loss So Far: 8.991840362548828
506 Total elapsed time: 02h 26m 36s
507
508 Search: Running Trial #14
509
510 Value           | Best Value So Far | Hyperparameter
511 2               | 2                  | num_layers
512 64              | 64                 | layer_1_units
513 0.3             | 0.2                | dropout
514 16              | 32                 | layer_2_units
515 16              | 32                 | layer_3_units
516
517 Epoch 1/100
518 12000/12000 [=====] - 53s
    4ms/step - loss: 7472.4604 - val_loss: 256.9862
519 Epoch 2/100
520 12000/12000 [=====] - 49s
    4ms/step - loss: 29.4574 - val_loss: 12.9156
521 Epoch 3/100
522 12000/12000 [=====] - 52s
    4ms/step - loss: 12.9187 - val_loss: 12.9187
523 Epoch 4/100
524 12000/12000 [=====] - 51s
    4ms/step - loss: 11.9185 - val_loss: 10.3921
525 Epoch 5/100
526 12000/12000 [=====] - 49s
    4ms/step - loss: 10.1385 - val_loss: 9.3334
527 Epoch 6/100
528 12000/12000 [=====] - 52s
    4ms/step - loss: 9.2317 - val_loss: 9.0690
529 Epoch 7/100
530 12000/12000 [=====] - 53s
    4ms/step - loss: 9.1443 - val_loss: 9.0145
531 Epoch 8/100
532 12000/12000 [=====] - 52s
    4ms/step - loss: 9.1214 - val_loss: 9.0430
533 Epoch 9/100
534 12000/12000 [=====] - 54s
    4ms/step - loss: 9.1069 - val_loss: 9.1200
```

```
535 Epoch 10/100
536 12000/12000 [=====] - 54s
    5ms/step - loss: 9.1056 - val_loss: 9.1874
537 Trial 14 Complete [00h 08m 39s]
538 val_loss: 9.01448917388916
539
540 Best val_loss So Far: 8.991840362548828
541 Total elapsed time: 02h 35m 16s
542
543 Search: Running Trial #15
544
545 Value          | Best Value So Far | Hyperparameter
546 3              | 2                  | num_layers
547 64             | 64                 | layer_1_units
548 0.3            | 0.2                | dropout
549 32             | 32                 | layer_2_units
550 16             | 32                 | layer_3_units
551
552 Epoch 1/100
553 12000/12000 [=====] - 77s
    6ms/step - loss: 7397.4814 - val_loss: 242.2572
554 Epoch 2/100
555 12000/12000 [=====] - 74s
    6ms/step - loss: 28.1946 - val_loss: 12.9159
556 Epoch 3/100
557 12000/12000 [=====] - 71s
    6ms/step - loss: 12.9181 - val_loss: 12.9176
558 Epoch 4/100
559 12000/12000 [=====] - 71s
    6ms/step - loss: 12.9160 - val_loss: 12.9120
560 Epoch 5/100
561 12000/12000 [=====] - 72s
    6ms/step - loss: 12.2101 - val_loss: 10.5186
562 Epoch 6/100
563 12000/12000 [=====] - 72s
    6ms/step - loss: 10.5725 - val_loss: 10.3451
564 Epoch 7/100
565 12000/12000 [=====] - 69s
    6ms/step - loss: 9.9996 - val_loss: 9.2419
566 Epoch 8/100
567 12000/12000 [=====] - 71s
```

```
567 6ms/step - loss: 9.3266 - val_loss: 9.0679
568 Epoch 9/100
569 12000/12000 [=====] - 75s
    6ms/step - loss: 9.2507 - val_loss: 9.0278
570 Epoch 10/100
571 12000/12000 [=====] - 76s
    6ms/step - loss: 9.2188 - val_loss: 9.0318
572 Epoch 11/100
573 12000/12000 [=====] - 73s
    6ms/step - loss: 9.1989 - val_loss: 9.0400
574 Epoch 12/100
575 12000/12000 [=====] - 71s
    6ms/step - loss: 9.1883 - val_loss: 9.0792
576 Trial 15 Complete [00h 14m 34s]
577 val_loss: 9.027837753295898
578
579 Best val_loss So Far: 8.991840362548828
580 Total elapsed time: 02h 49m 50s
581
582 Search: Running Trial #16
583
584 Value | Best Value So Far | Hyperparameter
585 1 | 2 | num_layers
586 32 | 64 | layer_1_units
587 0.2 | 0.2 | dropout
588 128 | 32 | layer_2_units
589 64 | 32 | layer_3_units
590
591 Epoch 1/100
592 12000/12000 [=====] - 52s
    4ms/step - loss: 3876.6982 - val_loss: 12.9165
593 Epoch 2/100
594 12000/12000 [=====] - 50s
    4ms/step - loss: 12.9217 - val_loss: 12.9224
595 Epoch 3/100
596 12000/12000 [=====] - 48s
    4ms/step - loss: 11.2233 - val_loss: 10.2416
597 Epoch 4/100
598 12000/12000 [=====] - 48s
    4ms/step - loss: 9.5867 - val_loss: 9.0553
599 Epoch 5/100
```

```
600 12000/12000 [=====] - 51s
    4ms/step - loss: 9.1669 - val_loss: 9.0677
601 Epoch 6/100
602 12000/12000 [=====] - 49s
    4ms/step - loss: 9.1443 - val_loss: 9.0229
603 Epoch 7/100
604 12000/12000 [=====] - 53s
    4ms/step - loss: 9.1348 - val_loss: 9.0181
605 Epoch 8/100
606 12000/12000 [=====] - 49s
    4ms/step - loss: 9.1256 - val_loss: 9.0231
607 Epoch 9/100
608 12000/12000 [=====] - 49s
    4ms/step - loss: 9.1343 - val_loss: 9.0162
609 Epoch 10/100
610 12000/12000 [=====] - 49s
    4ms/step - loss: 9.1113 - val_loss: 9.0930
611 Epoch 11/100
612 12000/12000 [=====] - 50s
    4ms/step - loss: 9.1112 - val_loss: 9.0481
613 Epoch 12/100
614 12000/12000 [=====] - 49s
    4ms/step - loss: 9.1066 - val_loss: 9.0192
615 Trial 16 Complete [00h 09m 57s]
616 val_loss: 9.016243934631348
617
618 Best val_loss So Far: 8.991840362548828
619 Total elapsed time: 02h 59m 47s
620
621 Search: Running Trial #17
622
623 Value          | Best Value So Far | Hyperparameter
624 2              | 2                  | num_layers
625 128             | 64                 | layer_1_units
626 0.4             | 0.2                | dropout
627 32              | 32                 | layer_2_units
628 16              | 32                 | layer_3_units
629
630 Epoch 1/100
631 12000/12000 [=====] - 84s
    7ms/step - loss: 3859.4143 - val_loss: 12.9164
```

```
632 Epoch 2/100
633 12000/12000 [=====] - 79s
    7ms/step - loss: 12.9202 - val_loss: 12.9362
634 Epoch 3/100
635 12000/12000 [=====] - 78s
    7ms/step - loss: 13.0025 - val_loss: 12.9190
636 Epoch 4/100
637 12000/12000 [=====] - 82s
    7ms/step - loss: 12.9238 - val_loss: 12.9211
638 Trial 17 Complete [00h 05m 24s]
639 val_loss: 12.916446685791016
640
641 Best val_loss So Far: 8.991840362548828
642 Total elapsed time: 03h 05m 10s
643
644 Search: Running Trial #18
645
646 Value           | Best Value So Far | Hyperparameter
647 1               | 2                  | num_layers
648 128             | 64                 | layer_1_units
649 0.3             | 0.2                | dropout
650 128             | 32                 | layer_2_units
651 64              | 32                 | layer_3_units
652
653 Epoch 1/100
654 12000/12000 [=====] - 119s
    10ms/step - loss: 942.9557 - val_loss: 12.9346
655 Epoch 2/100
656 12000/12000 [=====] - 115s
    10ms/step - loss: 12.9495 - val_loss: 12.9046
657 Epoch 3/100
658 12000/12000 [=====] - 113s
    9ms/step - loss: 13.0805 - val_loss: 12.7321
659 Epoch 4/100
660 12000/12000 [=====] - 119s
    10ms/step - loss: 10.5642 - val_loss: 9.5562
661 Epoch 5/100
662 12000/12000 [=====] - 124s
    10ms/step - loss: 9.3107 - val_loss: 9.0786
663 Epoch 6/100
664 12000/12000 [=====] - 116s
```

```
664 10ms/step - loss: 9.2303 - val_loss: 9.1598
665 Epoch 7/100
666 12000/12000 [=====] - 116s
    10ms/step - loss: 9.1921 - val_loss: 9.1305
667 Epoch 8/100
668 12000/12000 [=====] - 115s
    10ms/step - loss: 9.1682 - val_loss: 9.0800
669 Trial 18 Complete [00h 15m 36s]
670 val_loss: 9.07855224609375
671
672 Best val_loss So Far: 8.991840362548828
673 Total elapsed time: 03h 20m 47s
674
675 Search: Running Trial #19
676
677 Value          | Best Value So Far | Hyperparameter
678 3              | 2                  | num_layers
679 32             | 64                 | layer_1_units
680 0.1            | 0.2                | dropout
681 64             | 32                 | layer_2_units
682 128            | 32                 | layer_3_units
683
684 Epoch 1/100
685 12000/12000 [=====] - 111s
    9ms/step - loss: 930.7906 - val_loss: 12.9190
686 Epoch 2/100
687 12000/12000 [=====] - 107s
    9ms/step - loss: 12.9516 - val_loss: 12.9424
688 Epoch 3/100
689 12000/12000 [=====] - 107s
    9ms/step - loss: 12.1582 - val_loss: 9.3252
690 Epoch 4/100
691 12000/12000 [=====] - 108s
    9ms/step - loss: 9.2779 - val_loss: 9.1749
692 Epoch 5/100
693 12000/12000 [=====] - 97s
    8ms/step - loss: 9.1824 - val_loss: 9.0651
694 Epoch 6/100
695 12000/12000 [=====] - 104s
    9ms/step - loss: 9.2749 - val_loss: 9.0586
696 Epoch 7/100
```

```
697 12000/12000 [=====] - 106s
    9ms/step - loss: 9.1461 - val_loss: 9.1860
698 Epoch 8/100
699 12000/12000 [=====] - 101s
    8ms/step - loss: 9.2113 - val_loss: 9.0378
700 Epoch 9/100
701 12000/12000 [=====] - 104s
    9ms/step - loss: 9.1339 - val_loss: 9.0257
702 Epoch 10/100
703 12000/12000 [=====] - 108s
    9ms/step - loss: 9.1273 - val_loss: 9.0387
704 Epoch 11/100
705 12000/12000 [=====] - 112s
    9ms/step - loss: 9.1222 - val_loss: 9.0712
706 Epoch 12/100
707 12000/12000 [=====] - 110s
    9ms/step - loss: 9.1206 - val_loss: 9.1398
708 Trial 19 Complete [00h 21m 14s]
709 val_loss: 9.025662422180176
710
711 Best val_loss So Far: 8.991840362548828
712 Total elapsed time: 03h 42m 01s
713
714 Search: Running Trial #20
715
716 Value          | Best Value So Far | Hyperparameter
717 1              | 2                  | num_layers
718 16             | 64                 | layer_1_units
719 0.3            | 0.2                | dropout
720 64             | 32                 | layer_2_units
721 64             | 32                 | layer_3_units
722
723 Epoch 1/100
724 12000/12000 [=====] - 48s
    4ms/step - loss: 7301.8086 - val_loss: 231.5766
725 Epoch 2/100
726 12000/12000 [=====] - 45s
    4ms/step - loss: 27.2336 - val_loss: 12.9177
727 Epoch 3/100
728 12000/12000 [=====] - 47s
    4ms/step - loss: 12.9078 - val_loss: 12.2813
```

```
729 Epoch 4/100
730 12000/12000 [=====] - 45s
    4ms/step - loss: 10.7149 - val_loss: 10.2650
731 Epoch 5/100
732 12000/12000 [=====] - 44s
    4ms/step - loss: 10.3532 - val_loss: 10.1369
733 Epoch 6/100
734 12000/12000 [=====] - 44s
    4ms/step - loss: 9.8660 - val_loss: 9.3257
735 Epoch 7/100
736 12000/12000 [=====] - 44s
    4ms/step - loss: 9.3402 - val_loss: 9.1086
737 Epoch 8/100
738 12000/12000 [=====] - 44s
    4ms/step - loss: 9.2789 - val_loss: 9.1338
739 Epoch 9/100
740 12000/12000 [=====] - 44s
    4ms/step - loss: 9.2560 - val_loss: 9.0490
741 Epoch 10/100
742 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2439 - val_loss: 9.0402
743 Epoch 11/100
744 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2225 - val_loss: 9.0197
745 Epoch 12/100
746 12000/12000 [=====] - 42s
    3ms/step - loss: 9.2215 - val_loss: 9.0195
747 Epoch 13/100
748 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2183 - val_loss: 9.0529
749 Epoch 14/100
750 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2137 - val_loss: 9.0810
751 Epoch 15/100
752 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2117 - val_loss: 9.0266
753 Trial 20 Complete [00h 10m 52s]
754 val_loss: 9.019466400146484
755
756 Best val_loss So Far: 8.991840362548828
757 Total elapsed time: 03h 52m 53s
```

```
758
759 Search: Running Trial #21
760
761 Value           | Best Value So Far | Hyperparameter
762 1               | 2                  | num_layers
763 64              | 64                 | layer_1_units
764 0.2             | 0.2                | dropout
765 128             | 32                 | layer_2_units
766 16               | 32                 | layer_3_units
767
768 Epoch 1/100
769 12000/12000 [=====] - 56s
    5ms/step - loss: 1932.2740 - val_loss: 12.9156
770 Epoch 2/100
771 12000/12000 [=====] - 54s
    4ms/step - loss: 12.9303 - val_loss: 12.7904
772 Epoch 3/100
773 12000/12000 [=====] - 54s
    4ms/step - loss: 10.0934 - val_loss: 9.0986
774 Epoch 4/100
775 12000/12000 [=====] - 54s
    4ms/step - loss: 9.1709 - val_loss: 9.0300
776 Epoch 5/100
777 12000/12000 [=====] - 54s
    4ms/step - loss: 9.1436 - val_loss: 9.0391
778 Epoch 6/100
779 12000/12000 [=====] - 53s
    4ms/step - loss: 9.1283 - val_loss: 9.0618
780 Epoch 7/100
781 12000/12000 [=====] - 55s
    5ms/step - loss: 9.1121 - val_loss: 9.0111
782 Epoch 8/100
783 12000/12000 [=====] - 54s
    4ms/step - loss: 9.1054 - val_loss: 9.1312
784 Epoch 9/100
785 12000/12000 [=====] - 53s
    4ms/step - loss: 9.0981 - val_loss: 9.0755
786 Epoch 10/100
787 12000/12000 [=====] - 54s
    4ms/step - loss: 9.0908 - val_loss: 9.0312
788 Trial 21 Complete [00h 09m 01s]
```

```
789 val_loss: 9.011138916015625
790
791 Best val_loss So Far: 8.991840362548828
792 Total elapsed time: 04h 01m 54s
793
794 Search: Running Trial #22
795
796 Value          | Best Value So Far | Hyperparameter
797 3              | 2                  | num_layers
798 32             | 64                 | layer_1_units
799 0.3            | 0.2                | dropout
800 128            | 32                 | layer_2_units
801 32             | 32                 | layer_3_units
802
803 Epoch 1/100
804 12000/12000 [=====] - 94s
     8ms/step - loss: 3905.2217 - val_loss: 12.9167
805 Epoch 2/100
806 12000/12000 [=====] - 89s
     7ms/step - loss: 12.9212 - val_loss: 12.9174
807 Epoch 3/100
808 12000/12000 [=====] - 89s
     7ms/step - loss: 12.9241 - val_loss: 12.9158
809 Epoch 4/100
810 12000/12000 [=====] - 90s
     7ms/step - loss: 12.9230 - val_loss: 12.9440
811 Epoch 5/100
812 12000/12000 [=====] - 90s
     7ms/step - loss: 12.3514 - val_loss: 10.4722
813 Epoch 6/100
814 12000/12000 [=====] - 90s
     8ms/step - loss: 10.3969 - val_loss: 9.6515
815 Epoch 7/100
816 12000/12000 [=====] - 90s
     7ms/step - loss: 9.3975 - val_loss: 9.0497
817 Epoch 8/100
818 12000/12000 [=====] - 89s
     7ms/step - loss: 9.2614 - val_loss: 9.1488
819 Epoch 9/100
820 12000/12000 [=====] - 89s
     7ms/step - loss: 9.2304 - val_loss: 9.2591
```

```
821 Epoch 10/100
822 12000/12000 [=====] - 89s
    7ms/step - loss: 9.2127 - val_loss: 9.0459
823 Epoch 11/100
824 12000/12000 [=====] - 90s
    8ms/step - loss: 9.1922 - val_loss: 9.0943
825 Epoch 12/100
826 12000/12000 [=====] - 88s
    7ms/step - loss: 9.1882 - val_loss: 9.0675
827 Epoch 13/100
828 12000/12000 [=====] - 89s
    7ms/step - loss: 9.1781 - val_loss: 9.0167
829 Epoch 14/100
830 12000/12000 [=====] - 89s
    7ms/step - loss: 9.1738 - val_loss: 9.0673
831 Epoch 15/100
832 12000/12000 [=====] - 89s
    7ms/step - loss: 9.1694 - val_loss: 9.0761
833 Epoch 16/100
834 12000/12000 [=====] - 88s
    7ms/step - loss: 9.1685 - val_loss: 9.0206
835 Trial 22 Complete [00h 23m 53s]
836 val_loss: 9.016740798950195
837
838 Best val_loss So Far: 8.991840362548828
839 Total elapsed time: 04h 25m 46s
840
841 Search: Running Trial #23
842
843 Value          | Best Value So Far | Hyperparameter
844 3              | 2                  | num_layers
845 64             | 64                 | layer_1_units
846 0              | 0.2                | dropout
847 16             | 32                 | layer_2_units
848 16             | 32                 | layer_3_units
849
850 Epoch 1/100
851 12000/12000 [=====] - 67s
    5ms/step - loss: 7417.3945 - val_loss: 239.3069
852 Epoch 2/100
853 12000/12000 [=====] - 62s
```

```
853 5ms/step - loss: 27.9040 - val_loss: 12.9198
854 Epoch 3/100
855 12000/12000 [=====] - 62s
    5ms/step - loss: 12.9172 - val_loss: 12.9210
856 Epoch 4/100
857 12000/12000 [=====] - 62s
    5ms/step - loss: 11.5639 - val_loss: 10.5460
858 Epoch 5/100
859 12000/12000 [=====] - 62s
    5ms/step - loss: 10.1351 - val_loss: 9.2308
860 Epoch 6/100
861 12000/12000 [=====] - 62s
    5ms/step - loss: 9.1418 - val_loss: 9.0190
862 Epoch 7/100
863 12000/12000 [=====] - 62s
    5ms/step - loss: 9.0753 - val_loss: 9.0229
864 Epoch 8/100
865 12000/12000 [=====] - 62s
    5ms/step - loss: 9.0884 - val_loss: 9.0355
866 Epoch 9/100
867 12000/12000 [=====] - 62s
    5ms/step - loss: 9.0565 - val_loss: 9.1088
868 Trial 23 Complete [00h 09m 22s]
869 val_loss: 9.019012451171875
870
871 Best val_loss So Far: 8.991840362548828
872 Total elapsed time: 04h 35m 09s
873
874 Search: Running Trial #24
875
876 Value          | Best Value So Far | Hyperparameter
877 2              | 2                  | num_layers
878 16             | 64                 | layer_1_units
879 0.3            | 0.2                | dropout
880 16             | 32                 | layer_2_units
881 32             | 32                 | layer_3_units
882
883 Epoch 1/100
884 12000/12000 [=====] - 43s
    3ms/step - loss: 7204.4766 - val_loss: 209.5314
885 Epoch 2/100
```

```
886 12000/12000 [=====] - 40s
    3ms/step - loss: 25.4091 - val_loss: 12.9565
887 Epoch 3/100
888 12000/12000 [=====] - 40s
    3ms/step - loss: 11.9760 - val_loss: 10.3418
889 Epoch 4/100
890 12000/12000 [=====] - 40s
    3ms/step - loss: 10.4196 - val_loss: 10.1269
891 Epoch 5/100
892 12000/12000 [=====] - 40s
    3ms/step - loss: 9.9353 - val_loss: 9.2039
893 Epoch 6/100
894 12000/12000 [=====] - 41s
    3ms/step - loss: 9.3576 - val_loss: 9.0700
895 Epoch 7/100
896 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2946 - val_loss: 9.0371
897 Epoch 8/100
898 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2604 - val_loss: 9.0711
899 Epoch 9/100
900 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2639 - val_loss: 9.0215
901 Epoch 10/100
902 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2459 - val_loss: 9.0404
903 Epoch 11/100
904 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2412 - val_loss: 9.0205
905 Epoch 12/100
906 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2459 - val_loss: 9.1182
907 Epoch 13/100
908 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2356 - val_loss: 9.0160
909 Epoch 14/100
910 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2288 - val_loss: 9.0335
911 Epoch 15/100
912 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2294 - val_loss: 9.0985
```

```
913 Epoch 16/100
914 12000/12000 [=====] - 41s
    3ms/step - loss: 9.2277 - val_loss: 9.0178
915 Trial 24 Complete [00h 10m 51s]
916 val_loss: 9.015976905822754
917
918 Best val_loss So Far: 8.991840362548828
919 Total elapsed time: 04h 46m 00s
920
921 Search: Running Trial #25
922
923 Value          | Best Value So Far | Hyperparameter
924 1              | 2                  | num_layers
925 16             | 64                 | layer_1_units
926 0.1            | 0.2                | dropout
927 32             | 32                 | layer_2_units
928 64             | 32                 | layer_3_units
929
930 Epoch 1/100
931 12000/12000 [=====] - 43s
    3ms/step - loss: 7370.0532 - val_loss: 239.4590
932 Epoch 2/100
933 12000/12000 [=====] - 41s
    3ms/step - loss: 27.8834 - val_loss: 12.9340
934 Epoch 3/100
935 12000/12000 [=====] - 40s
    3ms/step - loss: 11.7514 - val_loss: 10.4860
936 Epoch 4/100
937 12000/12000 [=====] - 40s
    3ms/step - loss: 10.4424 - val_loss: 10.3569
938 Epoch 5/100
939 12000/12000 [=====] - 41s
    3ms/step - loss: 10.1322 - val_loss: 9.4085
940 Epoch 6/100
941 12000/12000 [=====] - 40s
    3ms/step - loss: 9.2328 - val_loss: 9.1776
942 Epoch 7/100
943 12000/12000 [=====] - 40s
    3ms/step - loss: 9.1420 - val_loss: 9.0231
944 Epoch 8/100
945 12000/12000 [=====] - 40s
```

```
945 3ms/step - loss: 9.1240 - val_loss: 9.0513
946 Epoch 9/100
947 12000/12000 [=====] - 41s
    3ms/step - loss: 9.1187 - val_loss: 9.0173
948 Epoch 10/100
949 12000/12000 [=====] - 40s
    3ms/step - loss: 9.1133 - val_loss: 9.0208
950 Epoch 11/100
951 12000/12000 [=====] - 40s
    3ms/step - loss: 9.1048 - val_loss: 9.0482
952 Epoch 12/100
953 12000/12000 [=====] - 41s
    3ms/step - loss: 9.1055 - val_loss: 9.0107
954 Epoch 13/100
955 12000/12000 [=====] - 40s
    3ms/step - loss: 9.1046 - val_loss: 9.0006
956 Epoch 14/100
957 12000/12000 [=====] - 40s
    3ms/step - loss: 9.1009 - val_loss: 9.0118
958 Epoch 15/100
959 12000/12000 [=====] - 40s
    3ms/step - loss: 9.0977 - val_loss: 9.0624
960 Epoch 16/100
961 12000/12000 [=====] - 41s
    3ms/step - loss: 9.0920 - val_loss: 9.0028
962 Trial 25 Complete [00h 10m 51s]
963 val_loss: 9.00058364868164
964
965 Best val_loss So Far: 8.991840362548828
966 Total elapsed time: 04h 56m 51s
967
968 Search: Running Trial #26
969
970 Value          | Best Value So Far | Hyperparameter
971 1              | 2                  | num_layers
972 32             | 64                 | layer_1_units
973 0.4            | 0.2                | dropout
974 32             | 32                 | layer_2_units
975 64             | 32                 | layer_3_units
976
977 Epoch 1/100
```

```
978 12000/12000 [=====] - 48s
    4ms/step - loss: 3873.7827 - val_loss: 12.9161
979 Epoch 2/100
980 12000/12000 [=====] - 45s
    4ms/step - loss: 12.9209 - val_loss: 12.9198
981 Epoch 3/100
982 12000/12000 [=====] - 45s
    4ms/step - loss: 10.3422 - val_loss: 9.3103
983 Epoch 4/100
984 12000/12000 [=====] - 45s
    4ms/step - loss: 9.3462 - val_loss: 9.0610
985 Epoch 5/100
986 12000/12000 [=====] - 45s
    4ms/step - loss: 9.2842 - val_loss: 9.3764
987 Epoch 6/100
988 12000/12000 [=====] - 46s
    4ms/step - loss: 9.2506 - val_loss: 9.0471
989 Epoch 7/100
990 12000/12000 [=====] - 45s
    4ms/step - loss: 9.2303 - val_loss: 9.0470
991 Epoch 8/100
992 12000/12000 [=====] - 45s
    4ms/step - loss: 9.2258 - val_loss: 9.0206
993 Epoch 9/100
994 12000/12000 [=====] - 45s
    4ms/step - loss: 9.2172 - val_loss: 9.0492
995 Epoch 10/100
996 12000/12000 [=====] - 46s
    4ms/step - loss: 9.1996 - val_loss: 9.0258
997 Epoch 11/100
998 12000/12000 [=====] - 45s
    4ms/step - loss: 9.2055 - val_loss: 9.0202
999 Epoch 12/100
1000 12000/12000 [=====] - 45s
    4ms/step - loss: 9.2074 - val_loss: 9.0206
1001 Epoch 13/100
1002 12000/12000 [=====] - 46s
    4ms/step - loss: 9.1979 - val_loss: 9.0440
1003 Epoch 14/100
1004 12000/12000 [=====] - 45s
    4ms/step - loss: 9.1940 - val_loss: 9.0995
```

```
1005 Trial 26 Complete [00h 10m 36s]
1006 val_loss: 9.02017879486084
1007
1008 Best val_loss So Far: 8.991840362548828
1009 Total elapsed time: 05h 07m 27s
1010
1011 Search: Running Trial #27
1012
1013 Value           | Best Value So Far |
Hyperparameter
1014 2               | 2                   | num_layers
1015 16              | 64                 | layer_1_units
1016 0.4             | 0.2                | dropout
1017 32              | 32                 | layer_2_units
1018 64              | 32                 | layer_3_units
1019
1020 Epoch 1/100
1021 12000/12000 [=====] - 46s
    4ms/step - loss: 3765.4875 - val_loss: 12.9174
1022 Epoch 2/100
1023 12000/12000 [=====] - 43s
    4ms/step - loss: 12.9214 - val_loss: 12.8935
1024 Epoch 3/100
1025 12000/12000 [=====] - 43s
    4ms/step - loss: 10.7872 - val_loss: 10.1373
1026 Epoch 4/100
1027 12000/12000 [=====] - 42s
    4ms/step - loss: 9.8196 - val_loss: 9.2511
1028 Epoch 5/100
1029 12000/12000 [=====] - 42s
    4ms/step - loss: 9.4880 - val_loss: 9.0760
1030 Epoch 6/100
1031 12000/12000 [=====] - 42s
    4ms/step - loss: 9.4443 - val_loss: 9.1212
1032 Epoch 7/100
1033 12000/12000 [=====] - 48s
    4ms/step - loss: 9.4375 - val_loss: 9.0784
1034 Epoch 8/100
1035 12000/12000 [=====] - 47s
    4ms/step - loss: 9.4179 - val_loss: 9.0914
1036 Trial 27 Complete [00h 05m 54s]
```

```
1037 val_loss: 9.076021194458008
1038
1039 Best val_loss So Far: 8.991840362548828
1040 Total elapsed time: 05h 13m 21s
1041
1042 Search: Running Trial #28
1043
1044 Value |Best Value So Far |
Hyperparameter
1045 3 |2 |num_layers
1046 128 |64 |layer_1_units
1047 0.1 |0.2 |dropout
1048 32 |32 |layer_2_units
1049 32 |32 |layer_3_units
1050
1051 Epoch 1/100
1052 12000/12000 [=====] - 100s
    8ms/step - loss: 3861.7261 - val_loss: 12.9156
1053 Epoch 2/100
1054 12000/12000 [=====] - 95s
    8ms/step - loss: 12.9219 - val_loss: 12.9163
1055 Epoch 3/100
1056 12000/12000 [=====] - 98s
    8ms/step - loss: 12.9925 - val_loss: 12.9183
1057 Epoch 4/100
1058 12000/12000 [=====] - 99s
    8ms/step - loss: 12.0683 - val_loss: 10.3911
1059 Epoch 5/100
1060 12000/12000 [=====] - 102s
    9ms/step - loss: 9.9292 - val_loss: 9.2532
1061 Epoch 6/100
1062 12000/12000 [=====] - 100s
    8ms/step - loss: 9.1689 - val_loss: 9.0313
1063 Epoch 7/100
1064 12000/12000 [=====] - 98s
    8ms/step - loss: 9.1221 - val_loss: 9.0264
1065 Epoch 8/100
1066 12000/12000 [=====] - 94s
    8ms/step - loss: 9.1084 - val_loss: 9.0549
1067 Epoch 9/100
1068 12000/12000 [=====] - 98s
```

```
1068 8ms/step - loss: 9.0984 - val_loss: 9.1145
1069 Epoch 10/100
1070 12000/12000 [=====] - 99s
    8ms/step - loss: 9.1392 - val_loss: 8.9958
1071 Epoch 11/100
1072 12000/12000 [=====] - 96s
    8ms/step - loss: 9.0876 - val_loss: 9.0184
1073 Epoch 12/100
1074 12000/12000 [=====] - 99s
    8ms/step - loss: 9.0863 - val_loss: 9.0084
1075 Epoch 13/100
1076 12000/12000 [=====] - 98s
    8ms/step - loss: 9.0809 - val_loss: 9.0193
1077 Trial 28 Complete [00h 21m 17s]
1078 val_loss: 8.995833396911621
1079
1080 Best val_loss So Far: 8.991840362548828
1081 Total elapsed time: 05h 34m 37s
1082
1083 Search: Running Trial #29
1084
1085 Value | Best Value So Far |
Hyperparameter
1086 3 | 2 | num_layers
1087 32 | 64 | layer_1_units
1088 0.2 | 0.2 | dropout
1089 64 | 32 | layer_2_units
1090 64 | 32 | layer_3_units
1091
1092 Epoch 1/100
1093 12000/12000 [=====] - 84s
    7ms/step - loss: 1927.6340 - val_loss: 12.9379
1094 Epoch 2/100
1095 12000/12000 [=====] - 75s
    6ms/step - loss: 12.4633 - val_loss: 10.3550
1096 Epoch 3/100
1097 12000/12000 [=====] - 75s
    6ms/step - loss: 10.3058 - val_loss: 10.1077
1098 Epoch 4/100
1099 12000/12000 [=====] - 73s
    6ms/step - loss: 9.7737 - val_loss: 9.1799
```

```
1100 Epoch 5/100
1101 12000/12000 [=====] - 79s
    7ms/step - loss: 9.2239 - val_loss: 9.0990
1102 Epoch 6/100
1103 12000/12000 [=====] - 79s
    7ms/step - loss: 9.1932 - val_loss: 9.1119
1104 Epoch 7/100
1105 12000/12000 [=====] - 79s
    7ms/step - loss: 9.2338 - val_loss: 9.4340
1106 Epoch 8/100
1107 12000/12000 [=====] - 81s
    7ms/step - loss: 9.1725 - val_loss: 9.0778
1108 Epoch 9/100
1109 12000/12000 [=====] - 83s
    7ms/step - loss: 9.1643 - val_loss: 9.0341
1110 Epoch 10/100
1111 12000/12000 [=====] - 77s
    6ms/step - loss: 9.1629 - val_loss: 9.1306
1112 Epoch 11/100
1113 12000/12000 [=====] - 86s
    7ms/step - loss: 9.1547 - val_loss: 9.0561
1114 Epoch 12/100
1115 12000/12000 [=====] - 79s
    7ms/step - loss: 9.1533 - val_loss: 9.0138
1116 Epoch 13/100
1117 12000/12000 [=====] - 83s
    7ms/step - loss: 9.1446 - val_loss: 9.0819
1118 Epoch 14/100
1119 12000/12000 [=====] - 79s
    7ms/step - loss: 9.1440 - val_loss: 9.0195
1120 Epoch 15/100
1121 12000/12000 [=====] - 83s
    7ms/step - loss: 9.1401 - val_loss: 9.0933
1122 Trial 29 Complete [00h 19m 56s]
1123 val_loss: 9.013823509216309
1124
1125 Best val_loss So Far: 8.991840362548828
1126 Total elapsed time: 05h 54m 34s
1127
1128 Search: Running Trial #30
1129
```

1130	Value	Best Value So Far
Hyperparameter		
1131	3	2 num_layers
1132	128	64 layer_1_units
1133	0.4	0.2 dropout
1134	64	32 layer_2_units
1135	64	32 layer_3_units
1136		
1137	Epoch 1/100	
1138	12000/12000	[=====] - 115s 9ms/step - loss: 1914.3199 - val_loss: 12.9285
1139	Epoch 2/100	
1140	12000/12000	[=====] - 120s 10ms/step - loss: 12.9340 - val_loss: 12.9166
1141	Epoch 3/100	
1142	12000/12000	[=====] - 121s 10ms/step - loss: 12.9331 - val_loss: 12.9336
1143	Epoch 4/100	
1144	12000/12000	[=====] - 128s 11ms/step - loss: 12.4242 - val_loss: 10.3515
1145	Epoch 5/100	
1146	12000/12000	[=====] - 121s 10ms/step - loss: 9.7173 - val_loss: 9.0720
1147	Epoch 6/100	
1148	12000/12000	[=====] - 115s 10ms/step - loss: 9.2710 - val_loss: 9.1484
1149	Epoch 7/100	
1150	12000/12000	[=====] - 111s 9ms/step - loss: 9.2307 - val_loss: 9.0997
1151	Epoch 8/100	
1152	12000/12000	[=====] - 109s 9ms/step - loss: 9.2014 - val_loss: 9.0208
1153	Epoch 9/100	
1154	12000/12000	[=====] - 109s 9ms/step - loss: 9.1907 - val_loss: 9.0460
1155	Epoch 10/100	
1156	12000/12000	[=====] - 125s 10ms/step - loss: 9.2363 - val_loss: 9.0040
1157	Epoch 11/100	
1158	12000/12000	[=====] - 139s 12ms/step - loss: 9.1667 - val_loss: 9.0152

```
1159 Epoch 12/100
1160 12000/12000 [=====] - 141s
    12ms/step - loss: 9.1546 - val_loss: 8.9973
1161 Epoch 13/100
1162 12000/12000 [=====] - 147s
    12ms/step - loss: 9.1498 - val_loss: 9.0237
1163 Epoch 14/100
1164 12000/12000 [=====] - 136s
    11ms/step - loss: 9.1405 - val_loss: 9.0652
1165 Epoch 15/100
1166 12000/12000 [=====] - 135s
    11ms/step - loss: 9.1335 - val_loss: 9.0041
1167 Trial 30 Complete [00h 31m 15s]
1168 val_loss: 8.997309684753418
1169
1170 Best val_loss So Far: 8.991840362548828
1171 Total elapsed time: 06h 25m 49s
1172
1173 Search: Running Trial #31
1174
1175 Value | Best Value So Far |
Hyperparameter
1176 3 | 2 | num_layers
1177 32 | 64 | layer_1_units
1178 0.2 | 0.2 | dropout
1179 32 | 32 | layer_2_units
1180 16 | 32 | layer_3_units
1181
1182 Epoch 1/100
1183 12000/12000 [=====] - 85s
    7ms/step - loss: 7348.8447 - val_loss: 231.8979
1184 Epoch 2/100
1185 12000/12000 [=====] - 81s
    7ms/step - loss: 27.2651 - val_loss: 12.9161
1186 Epoch 3/100
1187 12000/12000 [=====] - 78s
    7ms/step - loss: 12.9176 - val_loss: 12.9182
1188 Epoch 4/100
1189 12000/12000 [=====] - 79s
    7ms/step - loss: 12.9180 - val_loss: 12.9219
1190 Epoch 5/100
```

```
1191 12000/12000 [=====] - 80s
    7ms/step - loss: 12.0995 - val_loss: 10.6928
1192 Epoch 6/100
1193 12000/12000 [=====] - 86s
    7ms/step - loss: 10.4992 - val_loss: 10.2450
1194 Epoch 7/100
1195 12000/12000 [=====] - 70s
    6ms/step - loss: 9.9168 - val_loss: 9.1542
1196 Epoch 8/100
1197 12000/12000 [=====] - 72s
    6ms/step - loss: 9.2777 - val_loss: 9.1142
1198 Epoch 9/100
1199 12000/12000 [=====] - 70s
    6ms/step - loss: 9.2173 - val_loss: 9.0270
1200 Epoch 10/100
1201 12000/12000 [=====] - 64s
    5ms/step - loss: 9.1900 - val_loss: 9.0420
1202 Epoch 11/100
1203 12000/12000 [=====] - 69s
    6ms/step - loss: 9.1777 - val_loss: 9.0491
1204 Epoch 12/100
1205 12000/12000 [=====] - 65s
    5ms/step - loss: 9.1608 - val_loss: 9.0500
1206 Trial 31 Complete [00h 14m 59s]
1207 val_loss: 9.027036666870117
1208
1209 Best val_loss So Far: 8.991840362548828
1210 Total elapsed time: 06h 40m 48s
1211
1212 Search: Running Trial #32
1213
1214 Value | Best Value So Far | Hyperparameter
1215 3 | 2 | num_layers
1216 64 | 64 | layer_1_units
1217 0.2 | 0.2 | dropout
1218 16 | 32 | layer_2_units
1219 32 | 32 | layer_3_units
1220
1221 Epoch 1/100
1222 12000/12000 [=====] - 75s
```

```
1222 6ms/step - loss: 3778.7798 - val_loss: 12.9162
1223 Epoch 2/100
1224 12000/12000 [=====] - 69s
      6ms/step - loss: 12.9209 - val_loss: 12.9392
1225 Epoch 3/100
1226 12000/12000 [=====] - 70s
      6ms/step - loss: 11.3283 - val_loss: 10.3138
1227 Epoch 4/100
1228 12000/12000 [=====] - 69s
      6ms/step - loss: 10.3710 - val_loss: 10.1108
1229 Epoch 5/100
1230 12000/12000 [=====] - 70s
      6ms/step - loss: 9.9515 - val_loss: 9.1384
1231 Epoch 6/100
1232 12000/12000 [=====] - 71s
      6ms/step - loss: 9.3584 - val_loss: 9.2605
1233 Epoch 7/100
1234 12000/12000 [=====] - 69s
      6ms/step - loss: 9.2335 - val_loss: 9.0544
1235 Epoch 8/100
1236 12000/12000 [=====] - 71s
      6ms/step - loss: 9.2157 - val_loss: 9.0234
1237 Epoch 9/100
1238 12000/12000 [=====] - 73s
      6ms/step - loss: 9.1963 - val_loss: 9.2177
1239 Epoch 10/100
1240 12000/12000 [=====] - 77s
      6ms/step - loss: 9.2556 - val_loss: 9.0121
1241 Epoch 11/100
1242 12000/12000 [=====] - 76s
      6ms/step - loss: 9.1766 - val_loss: 9.0823
1243 Epoch 12/100
1244 12000/12000 [=====] - 76s
      6ms/step - loss: 9.1645 - val_loss: 9.0669
1245 Epoch 13/100
1246 12000/12000 [=====] - 74s
      6ms/step - loss: 9.1501 - val_loss: 9.0667
1247 Trial 32 Complete [00h 15m 41s]
1248 val_loss: 9.012101173400879
1249
1250 Best val_loss So Far: 8.991840362548828
```

```
1251 Total elapsed time: 06h 56m 29s
1252 The hyperparameters of the best model are:
1253 {'num_layers': 2, 'layer_1_units': 64, 'dropout': 0
     .2, 'layer_2_units': 32, 'layer_3_units': 32}
1254 Train model
1255 Epoch 1/100
1256 9600/9600 [=====] - 46s
      4ms/step - loss: 4828.2661 - val_loss: 13.0272
1257 Epoch 2/100
1258 9600/9600 [=====] - 44s
      5ms/step - loss: 12.9011 - val_loss: 12.9914
1259 Epoch 3/100
1260 9600/9600 [=====] - 43s
      4ms/step - loss: 12.8633 - val_loss: 12.2392
1261 Epoch 4/100
1262 9600/9600 [=====] - 43s
      4ms/step - loss: 10.5058 - val_loss: 10.1664
1263 Epoch 5/100
1264 9600/9600 [=====] - 44s
      5ms/step - loss: 9.3198 - val_loss: 9.1507
1265 Epoch 6/100
1266 9600/9600 [=====] - 45s
      5ms/step - loss: 9.1347 - val_loss: 9.2032
1267 Epoch 7/100
1268 9600/9600 [=====] - 42s
      4ms/step - loss: 9.1084 - val_loss: 9.0565
1269 Epoch 8/100
1270 9600/9600 [=====] - 44s
      5ms/step - loss: 9.0893 - val_loss: 9.0563
1271 Epoch 9/100
1272 9600/9600 [=====] - 42s
      4ms/step - loss: 9.0840 - val_loss: 9.0991
1273 Epoch 10/100
1274 9600/9600 [=====] - 43s
      5ms/step - loss: 9.0800 - val_loss: 9.0514
1275 Epoch 11/100
1276 9600/9600 [=====] - 44s
      5ms/step - loss: 9.0751 - val_loss: 9.0613
1277 Epoch 12/100
1278 9600/9600 [=====] - 43s
      4ms/step - loss: 9.0705 - val_loss: 9.0503
```

```
1279 Epoch 13/100
1280 9600/9600 [=====] - 43s
      5ms/step - loss: 9.0630 - val_loss: 9.1647
1281 Epoch 14/100
1282 9600/9600 [=====] - 45s
      5ms/step - loss: 9.0623 - val_loss: 9.0565
1283 Epoch 15/100
1284 9600/9600 [=====] - 43s
      5ms/step - loss: 9.0571 - val_loss: 9.1268
1285 Test model
1286 3000/3000 [=====] - 7s 2ms
      /step
1287 Mean Squared Error for each output: [ 1.22624853
      16.76763977]
1288 Mean Absolute Error for each output: [0.88383897 3
      .26642398]
1289 R-squared for each output: [0.63601792 0.25351476]
1290 Save model
1291 WARNING:absl:Function `wrapped_model` contains
      input name(s) LSTM_1_input with unsupported
      characters which will be renamed to lstm_1_input in
      the SavedModel.
1292 WARNING:absl:Found untraced functions such as
      _update_step_xla, lstm_cell_3_layer_call_fn,
      lstm_cell_3_layer_call_and_return_conditional_losses,
      lstm_cell_4_layer_call_fn,
      lstm_cell_4_layer_call_and_return_conditional_losses
      while saving (showing 5 of 5). These functions
      will not be directly callable after loading.
1293 Model saved
1294
1295 Process finished with exit code 0
1296
```