

```
1 D:\PyProjects\202200\venv\Scripts
  \python.exe D:/PyProjects/202200/
    LassoNet/LassoNet.py
2 #####39#####
3 Using cuda device
4 Initialized dense model in 26
  epochs, val loss 1.13e-02,
  regularization 5.33e-01
5 Lambda = 5.00e-02, selected 63
  features in 10 epochs
6 val_objective 1.35e-01, val_loss
  1.29e-02, regularization 2.44e+00
7 Lambda = 5.10e-02, selected 63
  features in 100 epochs
8 val_objective 4.27e-02, val_loss
  1.11e-02, regularization 6.20e-01
9 Lambda = 5.20e-02, selected 63
  features in 100 epochs
10 val_objective 1.72e-02, val_loss
   1.11e-02, regularization 1.17e-01
11 Lambda = 5.31e-02, selected 63
  features in 100 epochs
12 val_objective 1.29e-02, val_loss
   1.11e-02, regularization 3.28e-02
13 Lambda = 5.41e-02, selected 63
  features in 10 epochs
```

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14 val_objective 1.28e-02, val_loss  
    1.11e-02, regularization 3.17e-02  
15 Lambda = 5.52e-02, selected 63  
    features in 19 epochs  
16 val_objective 1.27e-02, val_loss  
    1.11e-02, regularization 2.77e-02  
17 Lambda = 5.63e-02, selected 63  
    features in 10 epochs  
18 val_objective 1.28e-02, val_loss  
    1.12e-02, regularization 2.89e-02  
19 Lambda = 5.74e-02, selected 63  
    features in 11 epochs  
20 val_objective 1.25e-02, val_loss  
    1.11e-02, regularization 2.43e-02  
21 Lambda = 5.86e-02, selected 63  
    features in 10 epochs  
22 val_objective 1.25e-02, val_loss  
    1.11e-02, regularization 2.31e-02  
23 Lambda = 5.98e-02, selected 63  
    features in 10 epochs  
24 val_objective 1.25e-02, val_loss  
    1.11e-02, regularization 2.31e-02  
25 Lambda = 6.09e-02, selected 63  
    features in 17 epochs  
26 val_objective 1.24e-02, val_loss  
    1.11e-02, regularization 2.01e-02
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27 Lambda = 6.22e-02, selected 63
      features in 10 epochs
28 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.92e-02
29 Lambda = 6.34e-02, selected 63
      features in 10 epochs
30 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.88e-02
31 Lambda = 6.47e-02, selected 63
      features in 10 epochs
32 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.82e-02
33 Lambda = 6.60e-02, selected 63
      features in 10 epochs
34 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.72e-02
35 Lambda = 6.73e-02, selected 63
      features in 10 epochs
36 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.68e-02
37 Lambda = 6.86e-02, selected 63
      features in 10 epochs
38 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.71e-02
39 Lambda = 7.00e-02, selected 63
      features in 10 epochs
```

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40 val_objective 1.22e-02, val_loss  
    1.11e-02, regularization 1.59e-02  
41 Lambda = 7.14e-02, selected 63  
    features in 10 epochs  
42 val_objective 1.22e-02, val_loss  
    1.11e-02, regularization 1.54e-02  
43 Lambda = 7.28e-02, selected 63  
    features in 10 epochs  
44 val_objective 1.23e-02, val_loss  
    1.11e-02, regularization 1.56e-02  
45 Lambda = 7.43e-02, selected 63  
    features in 10 epochs  
46 val_objective 1.22e-02, val_loss  
    1.11e-02, regularization 1.52e-02  
47 Lambda = 7.58e-02, selected 63  
    features in 10 epochs  
48 val_objective 1.24e-02, val_loss  
    1.12e-02, regularization 1.64e-02  
49 Lambda = 7.73e-02, selected 63  
    features in 11 epochs  
50 val_objective 1.22e-02, val_loss  
    1.11e-02, regularization 1.45e-02  
51 Lambda = 7.88e-02, selected 63  
    features in 10 epochs  
52 val_objective 1.23e-02, val_loss  
    1.11e-02, regularization 1.44e-02
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53 Lambda = 8.04e-02, selected 63
      features in 10 epochs
54 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.40e-02
55 Lambda = 8.20e-02, selected 63
      features in 10 epochs
56 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.46e-02
57 Lambda = 8.37e-02, selected 63
      features in 10 epochs
58 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.38e-02
59 Lambda = 8.53e-02, selected 63
      features in 10 epochs
60 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.37e-02
61 Lambda = 8.71e-02, selected 63
      features in 10 epochs
62 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.33e-02
63 Lambda = 8.88e-02, selected 63
      features in 10 epochs
64 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.32e-02
65 Lambda = 9.06e-02, selected 63
      features in 10 epochs
```

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66 val_objective 1.23e-02, val_loss  
    1.11e-02, regularization 1.30e-02  
67 Lambda = 9.24e-02, selected 63  
    features in 10 epochs  
68 val_objective 1.23e-02, val_loss  
    1.11e-02, regularization 1.26e-02  
69 Lambda = 9.42e-02, selected 63  
    features in 10 epochs  
70 val_objective 1.24e-02, val_loss  
    1.11e-02, regularization 1.30e-02  
71 Lambda = 9.61e-02, selected 63  
    features in 10 epochs  
72 val_objective 1.23e-02, val_loss  
    1.11e-02, regularization 1.25e-02  
73 Lambda = 9.80e-02, selected 63  
    features in 10 epochs  
74 val_objective 1.24e-02, val_loss  
    1.12e-02, regularization 1.24e-02  
75 Lambda = 1.00e-01, selected 63  
    features in 10 epochs  
76 val_objective 1.24e-02, val_loss  
    1.12e-02, regularization 1.22e-02  
77 Lambda = 1.02e-01, selected 63  
    features in 10 epochs  
78 val_objective 1.23e-02, val_loss  
    1.11e-02, regularization 1.19e-02
```

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79 Lambda = 1.04e-01, selected 63
      features in 10 epochs
80 val_objective 1.23e-02, val_loss
      1.11e-02, regularization 1.16e-
      02
81 Lambda = 1.06e-01, selected 63
      features in 10 epochs
82 val_objective 1.24e-02, val_loss
      1.11e-02, regularization 1.18e-
      02
83 Lambda = 1.08e-01, selected 63
      features in 10 epochs
84 val_objective 1.24e-02, val_loss
      1.12e-02, regularization 1.18e-
      02
85 Lambda = 1.10e-01, selected 63
      features in 10 epochs
86 val_objective 1.24e-02, val_loss
      1.11e-02, regularization 1.13e-
      02
87 Lambda = 1.13e-01, selected 63
      features in 10 epochs
88 val_objective 1.24e-02, val_loss
      1.11e-02, regularization 1.12e-
      02
89 Lambda = 1.15e-01, selected 63
```

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89 features in 10 epochs
90 val_objective 1.24e-02, val_loss
    1.11e-02, regularization 1.10e-
    02
91 Lambda = 1.17e-01, selected 63
    features in 10 epochs
92 val_objective 1.24e-02, val_loss
    1.12e-02, regularization 1.08e-
    02
93 Lambda = 1.20e-01, selected 63
    features in 10 epochs
94 val_objective 1.25e-02, val_loss
    1.11e-02, regularization 1.11e-
    02
95 Lambda = 1.22e-01, selected 63
    features in 10 epochs
96 val_objective 1.25e-02, val_loss
    1.11e-02, regularization 1.11e-
    02
97 Lambda = 1.24e-01, selected 63
    features in 19 epochs
98 val_objective 1.24e-02, val_loss
    1.11e-02, regularization 1.02e-
    02
99 Lambda = 1.27e-01, selected 63
    features in 10 epochs
```

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100 val_objective 1.25e-02, val_loss  
      1.12e-02, regularization 1.04e-  
      02  
101 Lambda = 1.29e-01, selected 63  
      features in 19 epochs  
102 val_objective 1.24e-02, val_loss  
      1.11e-02, regularization 9.78e-  
      03  
103 Lambda = 1.32e-01, selected 63  
      features in 10 epochs  
104 val_objective 1.25e-02, val_loss  
      1.12e-02, regularization 9.88e-  
      03  
105 Lambda = 1.35e-01, selected 63  
      features in 14 epochs  
106 val_objective 1.25e-02, val_loss  
      1.12e-02, regularization 9.45e-  
      03  
107 Lambda = 1.37e-01, selected 63  
      features in 10 epochs  
108 val_objective 1.27e-02, val_loss  
      1.12e-02, regularization 1.04e-  
      02  
109 Lambda = 1.40e-01, selected 63  
      features in 11 epochs  
110 val_objective 1.24e-02, val_loss
```

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110 1.11e-02, regularization 9.18e-03
111 Lambda = 1.43e-01, selected 63 features in 10 epochs
112 val_objective 1.25e-02, val_loss 1.12e-02, regularization 9.71e-03
113 Lambda = 1.46e-01, selected 63 features in 19 epochs
114 val_objective 1.25e-02, val_loss 1.11e-02, regularization 9.11e-03
115 Lambda = 1.49e-01, selected 63 features in 10 epochs
116 val_objective 1.26e-02, val_loss 1.12e-02, regularization 9.43e-03
117 Lambda = 1.52e-01, selected 63 features in 15 epochs
118 val_objective 1.26e-02, val_loss 1.12e-02, regularization 9.27e-03
119 Lambda = 1.55e-01, selected 63 features in 11 epochs
120 val_objective 1.25e-02, val_loss 1.11e-02, regularization 8.90e-
```

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120 03
121 Lambda = 1.58e-01, selected 63
      features in 10 epochs
122 val_objective 1.26e-02, val_loss
      1.12e-02, regularization 9.04e-
      03
123 Lambda = 1.61e-01, selected 63
      features in 10 epochs
124 val_objective 1.26e-02, val_loss
      1.11e-02, regularization 9.30e-
      03
125 Lambda = 1.64e-01, selected 63
      features in 12 epochs
126 val_objective 1.26e-02, val_loss
      1.11e-02, regularization 8.86e-
      03
127 Lambda = 1.67e-01, selected 63
      features in 10 epochs
128 val_objective 1.26e-02, val_loss
      1.11e-02, regularization 8.55e-
      03
129 Lambda = 1.71e-01, selected 63
      features in 10 epochs
130 val_objective 1.26e-02, val_loss
      1.11e-02, regularization 8.65e-
      03
```

```
131 Lambda = 1.74e-01, selected 63
      features in 13 epochs
132 val_objective 1.25e-02, val_loss
      1.11e-02, regularization 8.08e-
      03
133 Lambda = 1.78e-01, selected 63
      features in 10 epochs
134 val_objective 1.27e-02, val_loss
      1.12e-02, regularization 8.37e-
      03
135 Lambda = 1.81e-01, selected 63
      features in 18 epochs
136 val_objective 1.26e-02, val_loss
      1.11e-02, regularization 8.15e-
      03
137 Lambda = 1.85e-01, selected 63
      features in 10 epochs
138 val_objective 1.27e-02, val_loss
      1.11e-02, regularization 8.25e-
      03
139 Lambda = 1.88e-01, selected 63
      features in 10 epochs
140 val_objective 1.26e-02, val_loss
      1.11e-02, regularization 7.74e-
      03
141 Lambda = 1.92e-01, selected 63
```

```
141 features in 10 epochs
142 val_objective 1.27e-02, val_loss
    1.12e-02, regularization 7.89e-
    03
143 Lambda = 1.96e-01, selected 63
    features in 10 epochs
144 val_objective 1.27e-02, val_loss
    1.11e-02, regularization 7.82e-
    03
145 Lambda = 2.00e-01, selected 63
    features in 15 epochs
146 val_objective 1.28e-02, val_loss
    1.12e-02, regularization 8.02e-
    03
147 Lambda = 2.04e-01, selected 63
    features in 11 epochs
148 val_objective 1.27e-02, val_loss
    1.12e-02, regularization 7.52e-
    03
149 Lambda = 2.08e-01, selected 63
    features in 10 epochs
150 val_objective 1.28e-02, val_loss
    1.12e-02, regularization 7.67e-
    03
151 Lambda = 2.12e-01, selected 63
    features in 13 epochs
```

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152 val_objective 1.28e-02, val_loss  
    1.12e-02, regularization 7.67e-  
    03  
153 Lambda = 2.16e-01, selected 63  
    features in 13 epochs  
154 val_objective 1.28e-02, val_loss  
    1.12e-02, regularization 7.65e-  
    03  
155 Lambda = 2.21e-01, selected 63  
    features in 13 epochs  
156 val_objective 1.27e-02, val_loss  
    1.12e-02, regularization 6.97e-  
    03  
157 Lambda = 2.25e-01, selected 63  
    features in 10 epochs  
158 val_objective 1.28e-02, val_loss  
    1.12e-02, regularization 7.11e-  
    03  
159 Lambda = 2.30e-01, selected 63  
    features in 15 epochs  
160 val_objective 1.28e-02, val_loss  
    1.12e-02, regularization 7.18e-  
    03  
161 Lambda = 2.34e-01, selected 63  
    features in 14 epochs  
162 val_objective 1.28e-02, val_loss
```

```
162 1.11e-02, regularization 6.92e-03
163 Lambda = 2.39e-01, selected 63 features in 10 epochs
164 val_objective 1.29e-02, val_loss 1.12e-02, regularization 7.44e-03
165 Lambda = 2.44e-01, selected 63 features in 11 epochs
166 val_objective 1.27e-02, val_loss 1.12e-02, regularization 6.46e-03
167 Lambda = 2.49e-01, selected 63 features in 10 epochs
168 val_objective 1.29e-02, val_loss 1.12e-02, regularization 6.81e-03
169 Lambda = 2.54e-01, selected 63 features in 15 epochs
170 val_objective 1.29e-02, val_loss 1.12e-02, regularization 6.61e-03
171 Lambda = 2.59e-01, selected 63 features in 13 epochs
172 val_objective 1.28e-02, val_loss 1.12e-02, regularization 6.48e-
```

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172 03
173 Lambda = 2.64e-01, selected 63
    features in 10 epochs
174 val_objective 1.28e-02, val_loss
    1.12e-02, regularization 6.22e-
    03
175 Lambda = 2.69e-01, selected 63
    features in 10 epochs
176 val_objective 1.30e-02, val_loss
    1.12e-02, regularization 6.70e-
    03
177 Lambda = 2.75e-01, selected 63
    features in 12 epochs
178 val_objective 1.31e-02, val_loss
    1.12e-02, regularization 6.98e-
    03
179 Lambda = 2.80e-01, selected 63
    features in 11 epochs
180 val_objective 1.29e-02, val_loss
    1.14e-02, regularization 5.50e-
    03
181 Lambda = 2.86e-01, selected 63
    features in 10 epochs
182 val_objective 1.32e-02, val_loss
    1.14e-02, regularization 6.25e-
    03
```

```
183 Lambda = 2.91e-01, selected 63
      features in 12 epochs
184 val_objective 1.30e-02, val_loss
      1.12e-02, regularization 6.16e-
      03
185 Lambda = 2.97e-01, selected 63
      features in 11 epochs
186 val_objective 1.31e-02, val_loss
      1.12e-02, regularization 6.36e-
      03
187 Lambda = 3.03e-01, selected 63
      features in 14 epochs
188 val_objective 1.28e-02, val_loss
      1.13e-02, regularization 4.97e-
      03
189 Lambda = 3.09e-01, selected 63
      features in 10 epochs
190 val_objective 1.31e-02, val_loss
      1.12e-02, regularization 6.26e-
      03
191 Lambda = 3.15e-01, selected 63
      features in 11 epochs
192 val_objective 1.30e-02, val_loss
      1.12e-02, regularization 5.59e-
      03
193 Lambda = 3.22e-01, selected 63
```

```
193 features in 10 epochs
194 val_objective 1.32e-02, val_loss
    1.12e-02, regularization 6.19e-
    03
195 Lambda = 3.28e-01, selected 63
    features in 17 epochs
196 val_objective 1.30e-02, val_loss
    1.12e-02, regularization 5.43e-
    03
197 Lambda = 3.35e-01, selected 63
    features in 10 epochs
198 val_objective 1.30e-02, val_loss
    1.12e-02, regularization 5.48e-
    03
199 Lambda = 3.41e-01, selected 63
    features in 17 epochs
200 val_objective 1.31e-02, val_loss
    1.12e-02, regularization 5.48e-
    03
201 Lambda = 3.48e-01, selected 63
    features in 22 epochs
202 val_objective 1.31e-02, val_loss
    1.12e-02, regularization 5.55e-
    03
203 Lambda = 3.55e-01, selected 55
    features in 21 epochs
```

```
204 val_objective 1.17e-02, val_loss  
    1.14e-02, regularization 7.64e-  
    04  
205 Lambda = 3.62e-01, selected 54  
    features in 10 epochs  
206 val_objective 1.17e-02, val_loss  
    1.14e-02, regularization 9.55e-  
    04  
207 Lambda = 3.69e-01, selected 56  
    features in 12 epochs  
208 val_objective 1.16e-02, val_loss  
    1.14e-02, regularization 6.78e-  
    04  
209 Lambda = 3.77e-01, selected 54  
    features in 10 epochs  
210 val_objective 1.17e-02, val_loss  
    1.14e-02, regularization 6.63e-  
    04  
211 Lambda = 3.84e-01, selected 54  
    features in 10 epochs  
212 val_objective 1.17e-02, val_loss  
    1.14e-02, regularization 6.64e-  
    04  
213 Lambda = 3.92e-01, selected 51  
    features in 10 epochs  
214 val_objective 1.16e-02, val_loss
```

```
214 1.14e-02, regularization 6.16e-04
215 Lambda = 4.00e-01, selected 60 features in 10 epochs
216 val_objective 1.17e-02, val_loss 1.14e-02, regularization 7.92e-04
217 Lambda = 4.08e-01, selected 58 features in 10 epochs
218 val_objective 1.17e-02, val_loss 1.14e-02, regularization 6.82e-04
219 Lambda = 4.16e-01, selected 46 features in 10 epochs
220 val_objective 1.16e-02, val_loss 1.14e-02, regularization 4.99e-04
221 Lambda = 4.24e-01, selected 48 features in 10 epochs
222 val_objective 1.17e-02, val_loss 1.14e-02, regularization 6.46e-04
223 Lambda = 4.33e-01, selected 56 features in 10 epochs
224 val_objective 1.17e-02, val_loss 1.14e-02, regularization 7.40e-
```

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224 04
225 Lambda = 4.42e-01, selected 50
    features in 10 epochs
226 val_objective 1.16e-02, val_loss
    1.14e-02, regularization 4.93e-
    04
227 Lambda = 4.50e-01, selected 56
    features in 10 epochs
228 val_objective 1.17e-02, val_loss
    1.14e-02, regularization 7.32e-
    04
229 Lambda = 4.59e-01, selected 53
    features in 13 epochs
230 val_objective 1.16e-02, val_loss
    1.14e-02, regularization 4.93e-
    04
231 Lambda = 4.69e-01, selected 50
    features in 10 epochs
232 val_objective 1.16e-02, val_loss
    1.14e-02, regularization 5.06e-
    04
233 Lambda = 4.78e-01, selected 50
    features in 10 epochs
234 val_objective 1.17e-02, val_loss
    1.14e-02, regularization 5.46e-
    04
```

```
235 Lambda = 4.88e-01, selected 49  
      features in 10 epochs  
236 val_objective 1.17e-02, val_loss  
      1.14e-02, regularization 5.54e-  
      04  
237 Lambda = 4.97e-01, selected 53  
      features in 20 epochs  
238 val_objective 1.17e-02, val_loss  
      1.14e-02, regularization 5.52e-  
      04  
239 Lambda = 5.07e-01, selected 50  
      features in 10 epochs  
240 val_objective 1.16e-02, val_loss  
      1.14e-02, regularization 4.09e-  
      04  
241 Lambda = 5.17e-01, selected 51  
      features in 10 epochs  
242 val_objective 1.16e-02, val_loss  
      1.14e-02, regularization 4.15e-  
      04  
243 Lambda = 5.28e-01, selected 46  
      features in 10 epochs  
244 val_objective 1.16e-02, val_loss  
      1.14e-02, regularization 4.54e-  
      04  
245 Lambda = 5.38e-01, selected 47
```

```
245 features in 10 epochs
246 val_objective 1.16e-02, val_loss
    1.14e-02, regularization 3.30e-
    04
247 Lambda = 5.49e-01, selected 49
    features in 10 epochs
248 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 2.64e-
    04
249 Lambda = 5.60e-01, selected 43
    features in 10 epochs
250 val_objective 1.16e-02, val_loss
    1.14e-02, regularization 3.46e-
    04
251 Lambda = 5.71e-01, selected 45
    features in 10 epochs
252 val_objective 1.16e-02, val_loss
    1.14e-02, regularization 3.66e-
    04
253 Lambda = 5.83e-01, selected 48
    features in 10 epochs
254 val_objective 1.17e-02, val_loss
    1.14e-02, regularization 4.38e-
    04
255 Lambda = 5.94e-01, selected 44
    features in 10 epochs
```

```
256 val_objective 1.18e-02, val_loss  
    1.14e-02, regularization 5.66e-  
    04  
257 Lambda = 6.06e-01, selected 49  
    features in 11 epochs  
258 val_objective 1.16e-02, val_loss  
    1.14e-02, regularization 3.50e-  
    04  
259 Lambda = 6.18e-01, selected 41  
    features in 10 epochs  
260 val_objective 1.16e-02, val_loss  
    1.14e-02, regularization 3.72e-  
    04  
261 Lambda = 6.31e-01, selected 41  
    features in 10 epochs  
262 val_objective 1.16e-02, val_loss  
    1.14e-02, regularization 2.67e-  
    04  
263 Lambda = 6.43e-01, selected 39  
    features in 10 epochs  
264 val_objective 1.16e-02, val_loss  
    1.14e-02, regularization 2.79e-  
    04  
265 Lambda = 6.56e-01, selected 44  
    features in 13 epochs  
266 val_objective 1.15e-02, val_loss
```

```
266 1.14e-02, regularization 1.31e-04
267 Lambda = 6.69e-01, selected 42 features in 10 epochs
268 val_objective 1.16e-02, val_loss 1.14e-02, regularization 2.77e-04
269 Lambda = 6.83e-01, selected 32 features in 10 epochs
270 val_objective 1.16e-02, val_loss 1.14e-02, regularization 2.70e-04
271 Lambda = 6.96e-01, selected 37 features in 10 epochs
272 val_objective 1.16e-02, val_loss 1.14e-02, regularization 2.05e-04
273 Lambda = 7.10e-01, selected 39 features in 10 epochs
274 val_objective 1.16e-02, val_loss 1.14e-02, regularization 2.98e-04
275 Lambda = 7.24e-01, selected 39 features in 14 epochs
276 val_objective 1.16e-02, val_loss 1.14e-02, regularization 2.34e-
```

```
276 04
277 Lambda = 7.39e-01, selected 35
      features in 10 epochs
278 val_objective 1.16e-02, val_loss
      1.14e-02, regularization 2.77e-
      04
279 Lambda = 7.54e-01, selected 33
      features in 20 epochs
280 val_objective 1.15e-02, val_loss
      1.14e-02, regularization 1.25e-
      04
281 Lambda = 7.69e-01, selected 42
      features in 10 epochs
282 val_objective 1.16e-02, val_loss
      1.14e-02, regularization 2.30e-
      04
283 Lambda = 7.84e-01, selected 35
      features in 10 epochs
284 val_objective 1.16e-02, val_loss
      1.14e-02, regularization 2.02e-
      04
285 Lambda = 8.00e-01, selected 32
      features in 10 epochs
286 val_objective 1.15e-02, val_loss
      1.14e-02, regularization 1.55e-
      04
```

```
287 Lambda = 8.16e-01, selected 30
      features in 10 epochs
288 val_objective 1.16e-02, val_loss
      1.14e-02, regularization 1.62e-
      04
289 Lambda = 8.32e-01, selected 39
      features in 10 epochs
290 val_objective 1.15e-02, val_loss
      1.14e-02, regularization 1.56e-
      04
291 Lambda = 8.49e-01, selected 29
      features in 10 epochs
292 val_objective 1.16e-02, val_loss
      1.14e-02, regularization 1.83e-
      04
293 Lambda = 8.66e-01, selected 24
      features in 15 epochs
294 val_objective 1.16e-02, val_loss
      1.14e-02, regularization 1.69e-
      04
295 Lambda = 8.83e-01, selected 24
      features in 10 epochs
296 val_objective 1.15e-02, val_loss
      1.14e-02, regularization 5.81e-
      05
297 Lambda = 9.01e-01, selected 21
```

```
297 features in 10 epochs
298 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 5.36e-
    05
299 Lambda = 9.19e-01, selected 27
    features in 10 epochs
300 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 1.11e-
    04
301 Lambda = 9.37e-01, selected 23
    features in 20 epochs
302 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 6.89e-
    05
303 Lambda = 9.56e-01, selected 17
    features in 10 epochs
304 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 3.48e-
    05
305 Lambda = 9.75e-01, selected 9
    features in 10 epochs
306 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 6.93e-
    05
307 Lambda = 9.94e-01, selected 28
    features in 10 epochs
```

```
308 val_objective 1.15e-02, val_loss  
    1.14e-02, regularization 1.16e-  
    04  
309 Lambda = 1.01e+00, selected 14  
    features in 10 epochs  
310 val_objective 1.15e-02, val_loss  
    1.14e-02, regularization 5.24e-  
    05  
311 Lambda = 1.03e+00, selected 18  
    features in 10 epochs  
312 val_objective 1.15e-02, val_loss  
    1.14e-02, regularization 5.72e-  
    05  
313 Lambda = 1.06e+00, selected 17  
    features in 10 epochs  
314 val_objective 1.14e-02, val_loss  
    1.14e-02, regularization 2.42e-  
    05  
315 Lambda = 1.08e+00, selected 8  
    features in 10 epochs  
316 val_objective 1.15e-02, val_loss  
    1.14e-02, regularization 7.01e-  
    05  
317 Lambda = 1.10e+00, selected 17  
    features in 10 epochs  
318 val_objective 1.15e-02, val_loss
```

```
318 1.14e-02, regularization 1.01e-04
319 Lambda = 1.12e+00, selected 14 features in 10 epochs
320 val_objective 1.14e-02, val_loss 1.14e-02, regularization 3.10e-05
321 Lambda = 1.14e+00, selected 16 features in 10 epochs
322 val_objective 1.14e-02, val_loss 1.14e-02, regularization 1.29e-05
323 Lambda = 1.17e+00, selected 11 features in 10 epochs
324 val_objective 1.15e-02, val_loss 1.14e-02, regularization 3.65e-05
325 Lambda = 1.19e+00, selected 10 features in 10 epochs
326 val_objective 1.14e-02, val_loss 1.14e-02, regularization 1.24e-05
327 Lambda = 1.21e+00, selected 22 features in 10 epochs
328 val_objective 1.15e-02, val_loss 1.14e-02, regularization 5.26e-
```

```
328 05
329 Lambda = 1.24e+00, selected 8
    features in 10 epochs
330 val_objective 1.14e-02, val_loss
    1.14e-02, regularization 2.31e-
    05
331 Lambda = 1.26e+00, selected 13
    features in 10 epochs
332 val_objective 1.15e-02, val_loss
    1.14e-02, regularization 7.64e-
    05
333 Lambda = 1.29e+00, selected 7
    features in 10 epochs
334 val_objective 1.14e-02, val_loss
    1.14e-02, regularization 6.56e-
    06
335 Lambda = 1.31e+00, selected 8
    features in 10 epochs
336 val_objective 1.14e-02, val_loss
    1.14e-02, regularization 1.98e-
    05
337 Lambda = 1.34e+00, selected 1
    features in 10 epochs
338 val_objective 1.14e-02, val_loss
    1.14e-02, regularization 1.49e-
    06
```

```
339 Lambda = 1.37e+00, selected 4
      features in 10 epochs
340 val_objective 1.14e-02, val_loss
      1.14e-02, regularization 2.02e-
      05
341 Lambda = 1.39e+00, selected 12
      features in 10 epochs
342 val_objective 1.15e-02, val_loss
      1.14e-02, regularization 4.74e-
      05
343 Lambda = 1.42e+00, selected 0
      features in 10 epochs
344 val_objective 1.14e-02, val_loss
      1.14e-02, regularization 0.00e+
      00
345 D:/PyProjects/202200/LassoNet/
      LassoNet.py:129:
      PerformanceWarning: DataFrame is
      highly fragmented. This is
      usually the result of calling
      `frame.insert` many times, which
      has poor performance. Consider
      joining all columns at once
      using pd.concat(axis=1) instead
      . To get a de-fragmented frame
      , use `newframe = frame.copy()`
```

```
346 df[lambda_[i]] = selected_path
[i]
347 #####40#####
348 Using cuda device
349 Initialized dense model in 45
    epochs, val loss 1.10e-02,
    regularization 5.88e-01
350 Lambda = 5.00e-02, selected 63
    features in 10 epochs
351 val_objective 1.74e-01, val_loss
    1.39e-02, regularization 3.20e+
    00
352 Lambda = 5.10e-02, selected 63
    features in 100 epochs
353 val_objective 6.21e-02, val_loss
    1.07e-02, regularization 1.01e+
    00
354 Lambda = 5.20e-02, selected 63
    features in 100 epochs
355 val_objective 2.47e-02, val_loss
    1.06e-02, regularization 2.71e-
    01
356 Lambda = 5.31e-02, selected 63
    features in 100 epochs
357 val_objective 1.36e-02, val_loss
    1.06e-02, regularization 5.63e-
```

```
357 02
358 Lambda = 5.41e-02, selected 63
      features in 28 epochs
359 val_objective 1.32e-02, val_loss
      1.06e-02, regularization 4.73e-
      02
360 Lambda = 5.52e-02, selected 63
      features in 14 epochs
361 val_objective 1.30e-02, val_loss
      1.07e-02, regularization 4.20e-
      02
362 Lambda = 5.63e-02, selected 63
      features in 10 epochs
363 val_objective 1.29e-02, val_loss
      1.06e-02, regularization 3.99e-
      02
364 Lambda = 5.74e-02, selected 63
      features in 10 epochs
365 val_objective 1.29e-02, val_loss
      1.07e-02, regularization 3.81e-
      02
366 Lambda = 5.86e-02, selected 63
      features in 10 epochs
367 val_objective 1.28e-02, val_loss
      1.07e-02, regularization 3.67e-
      02
```

```
368 Lambda = 5.98e-02, selected 63
      features in 10 epochs
369 val_objective 1.28e-02, val_loss
      1.07e-02, regularization 3.49e-
      02
370 Lambda = 6.09e-02, selected 63
      features in 10 epochs
371 val_objective 1.27e-02, val_loss
      1.07e-02, regularization 3.42e-
      02
372 Lambda = 6.22e-02, selected 63
      features in 16 epochs
373 val_objective 1.26e-02, val_loss
      1.06e-02, regularization 3.13e-
      02
374 Lambda = 6.34e-02, selected 63
      features in 10 epochs
375 val_objective 1.26e-02, val_loss
      1.07e-02, regularization 2.97e-
      02
376 Lambda = 6.47e-02, selected 63
      features in 10 epochs
377 val_objective 1.25e-02, val_loss
      1.07e-02, regularization 2.85e-
      02
378 Lambda = 6.60e-02, selected 63
```

```
378 features in 10 epochs
379 val_objective 1.24e-02, val_loss
    1.07e-02, regularization 2.71e-
    02
380 Lambda = 6.73e-02, selected 63
    features in 10 epochs
381 val_objective 1.24e-02, val_loss
    1.07e-02, regularization 2.57e-
    02
382 Lambda = 6.86e-02, selected 63
    features in 10 epochs
383 val_objective 1.24e-02, val_loss
    1.07e-02, regularization 2.45e-
    02
384 Lambda = 7.00e-02, selected 63
    features in 10 epochs
385 val_objective 1.23e-02, val_loss
    1.07e-02, regularization 2.33e-
    02
386 Lambda = 7.14e-02, selected 63
    features in 10 epochs
387 val_objective 1.23e-02, val_loss
    1.07e-02, regularization 2.21e-
    02
388 Lambda = 7.28e-02, selected 63
    features in 19 epochs
```

```
389 val_objective 1.21e-02, val_loss  
    1.06e-02, regularization 2.04e-  
    02  
390 Lambda = 7.43e-02, selected 63  
    features in 10 epochs  
391 val_objective 1.21e-02, val_loss  
    1.06e-02, regularization 1.93e-  
    02  
392 Lambda = 7.58e-02, selected 63  
    features in 10 epochs  
393 val_objective 1.21e-02, val_loss  
    1.07e-02, regularization 1.88e-  
    02  
394 Lambda = 7.73e-02, selected 63  
    features in 18 epochs  
395 val_objective 1.20e-02, val_loss  
    1.07e-02, regularization 1.74e-  
    02  
396 Lambda = 7.88e-02, selected 63  
    features in 10 epochs  
397 val_objective 1.20e-02, val_loss  
    1.07e-02, regularization 1.63e-  
    02  
398 Lambda = 8.04e-02, selected 63  
    features in 10 epochs  
399 val_objective 1.19e-02, val_loss
```

```
399 1.07e-02, regularization 1.57e-02
400 Lambda = 8.20e-02, selected 63 features in 10 epochs
401 val_objective 1.20e-02, val_loss 1.07e-02, regularization 1.55e-02
402 Lambda = 8.37e-02, selected 63 features in 12 epochs
403 val_objective 1.19e-02, val_loss 1.07e-02, regularization 1.45e-02
404 Lambda = 8.53e-02, selected 63 features in 10 epochs
405 val_objective 1.19e-02, val_loss 1.07e-02, regularization 1.45e-02
406 Lambda = 8.71e-02, selected 63 features in 10 epochs
407 val_objective 1.20e-02, val_loss 1.07e-02, regularization 1.43e-02
408 Lambda = 8.88e-02, selected 63 features in 20 epochs
409 val_objective 1.19e-02, val_loss 1.07e-02, regularization 1.38e-
```

```
409 02
410 Lambda = 9.06e-02, selected 63
      features in 10 epochs
411 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.32e-
      02
412 Lambda = 9.24e-02, selected 63
      features in 10 epochs
413 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.30e-
      02
414 Lambda = 9.42e-02, selected 63
      features in 10 epochs
415 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.27e-
      02
416 Lambda = 9.61e-02, selected 63
      features in 10 epochs
417 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.30e-
      02
418 Lambda = 9.80e-02, selected 63
      features in 10 epochs
419 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.25e-
      02
```

```
420 Lambda = 1.00e-01, selected 63
      features in 10 epochs
421 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.20e-
      02
422 Lambda = 1.02e-01, selected 63
      features in 15 epochs
423 val_objective 1.20e-02, val_loss
      1.08e-02, regularization 1.18e-
      02
424 Lambda = 1.04e-01, selected 63
      features in 10 epochs
425 val_objective 1.20e-02, val_loss
      1.07e-02, regularization 1.19e-
      02
426 Lambda = 1.06e-01, selected 63
      features in 15 epochs
427 val_objective 1.19e-02, val_loss
      1.07e-02, regularization 1.12e-
      02
428 Lambda = 1.08e-01, selected 63
      features in 10 epochs
429 val_objective 1.20e-02, val_loss
      1.07e-02, regularization 1.15e-
      02
430 Lambda = 1.10e-01, selected 63
```

```
430 features in 10 epochs
431 val_objective 1.20e-02, val_loss
    1.07e-02, regularization 1.15e-
    02
432 Lambda = 1.13e-01, selected 63
    features in 10 epochs
433 val_objective 1.19e-02, val_loss
    1.07e-02, regularization 1.11e-
    02
434 Lambda = 1.15e-01, selected 63
    features in 10 epochs
435 val_objective 1.20e-02, val_loss
    1.07e-02, regularization 1.10e-
    02
436 Lambda = 1.17e-01, selected 63
    features in 10 epochs
437 val_objective 1.20e-02, val_loss
    1.07e-02, regularization 1.15e-
    02
438 Lambda = 1.20e-01, selected 63
    features in 14 epochs
439 val_objective 1.21e-02, val_loss
    1.08e-02, regularization 1.08e-
    02
440 Lambda = 1.22e-01, selected 63
    features in 12 epochs
```

```
441 val_objective 1.20e-02, val_loss  
    1.07e-02, regularization 1.07e-  
    02  
442 Lambda = 1.24e-01, selected 63  
    features in 10 epochs  
443 val_objective 1.20e-02, val_loss  
    1.07e-02, regularization 1.06e-  
    02  
444 Lambda = 1.27e-01, selected 63  
    features in 10 epochs  
445 val_objective 1.20e-02, val_loss  
    1.07e-02, regularization 9.91e-  
    03  
446 Lambda = 1.29e-01, selected 63  
    features in 10 epochs  
447 val_objective 1.21e-02, val_loss  
    1.08e-02, regularization 1.06e-  
    02  
448 Lambda = 1.32e-01, selected 63  
    features in 14 epochs  
449 val_objective 1.22e-02, val_loss  
    1.08e-02, regularization 1.06e-  
    02  
450 Lambda = 1.35e-01, selected 63  
    features in 12 epochs  
451 val_objective 1.21e-02, val_loss
```

```
451 1.08e-02, regularization 1.01e-02
452 Lambda = 1.37e-01, selected 63 features in 14 epochs
453 val_objective 1.22e-02, val_loss 1.08e-02, regularization 1.01e-02
454 Lambda = 1.40e-01, selected 63 features in 11 epochs
455 val_objective 1.20e-02, val_loss 1.07e-02, regularization 9.68e-03
456 Lambda = 1.43e-01, selected 63 features in 10 epochs
457 val_objective 1.21e-02, val_loss 1.08e-02, regularization 9.76e-03
458 Lambda = 1.46e-01, selected 63 features in 14 epochs
459 val_objective 1.22e-02, val_loss 1.08e-02, regularization 1.01e-02
460 Lambda = 1.49e-01, selected 63 features in 12 epochs
461 val_objective 1.21e-02, val_loss 1.07e-02, regularization 9.16e-
```

```
461 03
462 Lambda = 1.52e-01, selected 63
    features in 13 epochs
463 val_objective 1.22e-02, val_loss
    1.08e-02, regularization 9.23e-
    03
464 Lambda = 1.55e-01, selected 63
    features in 20 epochs
465 val_objective 1.22e-02, val_loss
    1.07e-02, regularization 9.39e-
    03
466 Lambda = 1.58e-01, selected 63
    features in 10 epochs
467 val_objective 1.21e-02, val_loss
    1.07e-02, regularization 9.18e-
    03
468 Lambda = 1.61e-01, selected 63
    features in 16 epochs
469 val_objective 1.22e-02, val_loss
    1.07e-02, regularization 9.00e-
    03
470 Lambda = 1.64e-01, selected 63
    features in 10 epochs
471 val_objective 1.22e-02, val_loss
    1.07e-02, regularization 8.84e-
    03
```

```
472 Lambda = 1.67e-01, selected 63
      features in 17 epochs
473 val_objective 1.22e-02, val_loss
      1.07e-02, regularization 8.73e-
      03
474 Lambda = 1.71e-01, selected 63
      features in 10 epochs
475 val_objective 1.22e-02, val_loss
      1.07e-02, regularization 8.51e-
      03
476 Lambda = 1.74e-01, selected 63
      features in 10 epochs
477 val_objective 1.22e-02, val_loss
      1.07e-02, regularization 8.62e-
      03
478 Lambda = 1.78e-01, selected 63
      features in 10 epochs
479 val_objective 1.23e-02, val_loss
      1.07e-02, regularization 8.95e-
      03
480 Lambda = 1.81e-01, selected 63
      features in 12 epochs
481 val_objective 1.24e-02, val_loss
      1.08e-02, regularization 8.78e-
      03
482 Lambda = 1.85e-01, selected 63
```

```
482 features in 11 epochs
483 val_objective 1.24e-02, val_loss
    1.07e-02, regularization 8.82e-
    03
484 Lambda = 1.88e-01, selected 63
    features in 15 epochs
485 val_objective 1.23e-02, val_loss
    1.07e-02, regularization 8.21e-
    03
486 Lambda = 1.92e-01, selected 63
    features in 10 epochs
487 val_objective 1.22e-02, val_loss
    1.07e-02, regularization 7.88e-
    03
488 Lambda = 1.96e-01, selected 63
    features in 10 epochs
489 val_objective 1.23e-02, val_loss
    1.07e-02, regularization 8.17e-
    03
490 Lambda = 2.00e-01, selected 63
    features in 11 epochs
491 val_objective 1.22e-02, val_loss
    1.07e-02, regularization 7.79e-
    03
492 Lambda = 2.04e-01, selected 63
    features in 10 epochs
```

```
493 val_objective 1.24e-02, val_loss  
    1.08e-02, regularization 7.98e-  
    03  
494 Lambda = 2.08e-01, selected 63  
    features in 11 epochs  
495 val_objective 1.23e-02, val_loss  
    1.07e-02, regularization 7.67e-  
    03  
496 Lambda = 2.12e-01, selected 63  
    features in 16 epochs  
497 val_objective 1.24e-02, val_loss  
    1.08e-02, regularization 7.53e-  
    03  
498 Lambda = 2.16e-01, selected 63  
    features in 14 epochs  
499 val_objective 1.24e-02, val_loss  
    1.08e-02, regularization 7.49e-  
    03  
500 Lambda = 2.21e-01, selected 63  
    features in 14 epochs  
501 val_objective 1.23e-02, val_loss  
    1.07e-02, regularization 7.26e-  
    03  
502 Lambda = 2.25e-01, selected 63  
    features in 10 epochs  
503 val_objective 1.27e-02, val_loss
```

```
503 1.08e-02, regularization 8.45e-03
504 Lambda = 2.30e-01, selected 63 features in 16 epochs
505 val_objective 1.25e-02, val_loss 1.08e-02, regularization 7.28e-03
506 Lambda = 2.34e-01, selected 63 features in 12 epochs
507 val_objective 1.25e-02, val_loss 1.08e-02, regularization 7.32e-03
508 Lambda = 2.39e-01, selected 63 features in 15 epochs
509 val_objective 1.24e-02, val_loss 1.07e-02, regularization 6.95e-03
510 Lambda = 2.44e-01, selected 63 features in 18 epochs
511 val_objective 1.24e-02, val_loss 1.08e-02, regularization 6.58e-03
512 Lambda = 2.49e-01, selected 63 features in 10 epochs
513 val_objective 1.24e-02, val_loss 1.08e-02, regularization 6.53e-
```

```
513 03
514 Lambda = 2.54e-01, selected 63
      features in 10 epochs
515 val_objective 1.25e-02, val_loss
      1.08e-02, regularization 6.82e-
      03
516 Lambda = 2.59e-01, selected 63
      features in 11 epochs
517 val_objective 1.25e-02, val_loss
      1.08e-02, regularization 6.48e-
      03
518 Lambda = 2.64e-01, selected 63
      features in 12 epochs
519 val_objective 1.25e-02, val_loss
      1.08e-02, regularization 6.36e-
      03
520 Lambda = 2.69e-01, selected 63
      features in 11 epochs
521 val_objective 1.24e-02, val_loss
      1.08e-02, regularization 6.03e-
      03
522 Lambda = 2.75e-01, selected 63
      features in 10 epochs
523 val_objective 1.26e-02, val_loss
      1.09e-02, regularization 6.38e-
      03
```

```
524 Lambda = 2.80e-01, selected 63
      features in 16 epochs
525 val_objective 1.25e-02, val_loss
      1.08e-02, regularization 5.96e-
      03
526 Lambda = 2.86e-01, selected 63
      features in 18 epochs
527 val_objective 1.26e-02, val_loss
      1.09e-02, regularization 5.91e-
      03
528 Lambda = 2.91e-01, selected 63
      features in 10 epochs
529 val_objective 1.26e-02, val_loss
      1.08e-02, regularization 5.96e-
      03
530 Lambda = 2.97e-01, selected 63
      features in 10 epochs
531 val_objective 1.26e-02, val_loss
      1.10e-02, regularization 5.36e-
      03
532 Lambda = 3.03e-01, selected 63
      features in 16 epochs
533 val_objective 1.25e-02, val_loss
      1.08e-02, regularization 5.74e-
      03
534 Lambda = 3.09e-01, selected 63
```

```
534 features in 10 epochs
535 val_objective 1.26e-02, val_loss
    1.08e-02, regularization 6.04e-
    03
536 Lambda = 3.15e-01, selected 62
    features in 21 epochs
537 val_objective 1.16e-02, val_loss
    1.11e-02, regularization 1.65e-
    03
538 Lambda = 3.22e-01, selected 63
    features in 13 epochs
539 val_objective 1.13e-02, val_loss
    1.10e-02, regularization 7.05e-
    04
540 Lambda = 3.28e-01, selected 56
    features in 10 epochs
541 val_objective 1.13e-02, val_loss
    1.11e-02, regularization 7.01e-
    04
542 Lambda = 3.35e-01, selected 61
    features in 10 epochs
543 val_objective 1.15e-02, val_loss
    1.11e-02, regularization 1.17e-
    03
544 Lambda = 3.41e-01, selected 62
    features in 17 epochs
```

```
545 val_objective 1.16e-02, val_loss  
      1.10e-02, regularization 1.69e-  
      03  
546 Lambda = 3.48e-01, selected 62  
      features in 11 epochs  
547 val_objective 1.15e-02, val_loss  
      1.10e-02, regularization 1.37e-  
      03  
548 Lambda = 3.55e-01, selected 59  
      features in 12 epochs  
549 val_objective 1.14e-02, val_loss  
      1.11e-02, regularization 1.02e-  
      03  
550 Lambda = 3.62e-01, selected 46  
      features in 20 epochs  
551 val_objective 1.12e-02, val_loss  
      1.11e-02, regularization 2.76e-  
      04  
552 Lambda = 3.69e-01, selected 58  
      features in 10 epochs  
553 val_objective 1.15e-02, val_loss  
      1.11e-02, regularization 1.08e-  
      03  
554 Lambda = 3.77e-01, selected 61  
      features in 13 epochs  
555 val_objective 1.16e-02, val_loss
```

```
555 1.12e-02, regularization 1.26e-03
556 Lambda = 3.84e-01, selected 62 features in 13 epochs
557 val_objective 1.16e-02, val_loss 1.12e-02, regularization 1.04e-03
558 Lambda = 3.92e-01, selected 32 features in 12 epochs
559 val_objective 1.11e-02, val_loss 1.11e-02, regularization 1.13e-04
560 Lambda = 4.00e-01, selected 62 features in 10 epochs
561 val_objective 1.14e-02, val_loss 1.10e-02, regularization 9.62e-04
562 Lambda = 4.08e-01, selected 31 features in 19 epochs
563 val_objective 1.11e-02, val_loss 1.10e-02, regularization 4.14e-05
564 Lambda = 4.16e-01, selected 28 features in 10 epochs
565 val_objective 1.11e-02, val_loss 1.10e-02, regularization 5.60e-
```

```
565 05
566 Lambda = 4.24e-01, selected 28
      features in 10 epochs
567 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 5.09e-
      05
568 Lambda = 4.33e-01, selected 27
      features in 10 epochs
569 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 2.53e-
      05
570 Lambda = 4.42e-01, selected 29
      features in 10 epochs
571 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 4.87e-
      05
572 Lambda = 4.50e-01, selected 36
      features in 10 epochs
573 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 8.48e-
      05
574 Lambda = 4.59e-01, selected 16
      features in 10 epochs
575 val_objective 1.10e-02, val_loss
      1.10e-02, regularization 1.57e-
      05
```

```
576 Lambda = 4.69e-01, selected 28
      features in 10 epochs
577 val_objective 1.11e-02, val_loss
      1.10e-02, regularization 4.82e-
      05
578 Lambda = 4.78e-01, selected 23
      features in 10 epochs
579 val_objective 1.11e-02, val_loss
      1.10e-02, regularization 3.91e-
      05
580 Lambda = 4.88e-01, selected 19
      features in 10 epochs
581 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 4.60e-
      05
582 Lambda = 4.97e-01, selected 24
      features in 10 epochs
583 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 3.88e-
      05
584 Lambda = 5.07e-01, selected 7
      features in 10 epochs
585 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 6.87e-
      06
586 Lambda = 5.17e-01, selected 15
```

```
586 features in 10 epochs
587 val_objective 1.11e-02, val_loss
    1.11e-02, regularization 3.44e-
    05
588 Lambda = 5.28e-01, selected 9
    features in 10 epochs
589 val_objective 1.11e-02, val_loss
    1.10e-02, regularization 2.95e-
    05
590 Lambda = 5.38e-01, selected 12
    features in 10 epochs
591 val_objective 1.10e-02, val_loss
    1.10e-02, regularization 6.13e-
    06
592 Lambda = 5.49e-01, selected 18
    features in 10 epochs
593 val_objective 1.11e-02, val_loss
    1.10e-02, regularization 5.52e-
    05
594 Lambda = 5.60e-01, selected 23
    features in 10 epochs
595 val_objective 1.11e-02, val_loss
    1.10e-02, regularization 3.23e-
    05
596 Lambda = 5.71e-01, selected 18
    features in 10 epochs
```

```
597 val_objective 1.11e-02, val_loss  
    1.10e-02, regularization 4.74e-  
    05  
598 Lambda = 5.83e-01, selected 12  
    features in 10 epochs  
599 val_objective 1.11e-02, val_loss  
    1.11e-02, regularization 6.25e-  
    06  
600 Lambda = 5.94e-01, selected 13  
    features in 10 epochs  
601 val_objective 1.10e-02, val_loss  
    1.10e-02, regularization 5.47e-  
    06  
602 Lambda = 6.06e-01, selected 10  
    features in 10 epochs  
603 val_objective 1.11e-02, val_loss  
    1.10e-02, regularization 7.66e-  
    06  
604 Lambda = 6.18e-01, selected 11  
    features in 10 epochs  
605 val_objective 1.11e-02, val_loss  
    1.11e-02, regularization 2.14e-  
    05  
606 Lambda = 6.31e-01, selected 1  
    features in 10 epochs  
607 val_objective 1.10e-02, val_loss
```

```
607 1.10e-02, regularization 4.09e-06
608 Lambda = 6.43e-01, selected 12 features in 10 epochs
609 val_objective 1.11e-02, val_loss 1.11e-02, regularization 4.26e-06
610 Lambda = 6.56e-01, selected 18 features in 10 epochs
611 val_objective 1.11e-02, val_loss 1.11e-02, regularization 1.58e-05
612 Lambda = 6.69e-01, selected 4 features in 10 epochs
613 val_objective 1.10e-02, val_loss 1.10e-02, regularization 3.78e-07
614 Lambda = 6.83e-01, selected 9 features in 10 epochs
615 val_objective 1.11e-02, val_loss 1.11e-02, regularization 3.90e-06
616 Lambda = 6.96e-01, selected 13 features in 10 epochs
617 val_objective 1.11e-02, val_loss 1.10e-02, regularization 4.88e-
```

```
617 06
618 Lambda = 7.10e-01, selected 8
      features in 10 epochs
619 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 6.91e-
      06
620 Lambda = 7.24e-01, selected 10
      features in 10 epochs
621 val_objective 1.11e-02, val_loss
      1.11e-02, regularization 9.60e-
      06
622 Lambda = 7.39e-01, selected 0
      features in 10 epochs
623 val_objective 1.10e-02, val_loss
      1.10e-02, regularization 0.00e+
      00
624 D:/PyProjects/202204/LassoNet/
      LassoNet.py:129:
      PerformanceWarning: DataFrame is
      highly fragmented. This is
      usually the result of calling
      `frame.insert` many times, which
      has poor performance. Consider
      joining all columns at once
      using pd.concat(axis=1) instead
      . To get a de-fragmented frame
```

```
624 , use `newframe = frame.copy()`
625   df[lambda_[i]] = selected_path
       [i]
626 Running time  26729.657588005066
627
628 Process finished with exit code
     0
629
```