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1 C:\Users\vince\anaconda3\python.exe "D:/
  Documents/Choses école/UQAC/Session7/8INF436-
  Forage_de_donnees/TP3/main.py"
2 2021-04-07 09:46:46.882142: W tensorflow/
  stream_executor/platform/default/dso_loader.
  cc:60] Could not load dynamic library '
  cudart64_110.dll'; dlerror: cudart64_110.dll
  not found
3 2021-04-07 09:46:46.882244: I tensorflow/
  stream_executor/cuda/cudart_stub.cc:29]
  Ignore above cudart dlerror if you do not
  have a GPU set up on your machine.
4 Missing values per attribute:
5 id                                0
6 gender                           0
7 age                              0
8 hypertension                      0
9 heart_disease                    0
10 ever_married                     0
11 work_type                        0
12 Residence_type                   0
13 avg_glucose_level                0
14 bmi                              0
15 smoking_status                   0
16 stroke                           0
17 dtype: int64
18 <class 'pandas.core.frame.DataFrame'>
19 Int64Index: 4860 entries, 0 to 5109
20 Data columns (total 10 columns):
21 #   Column                Non-Null Count  Dtype
22 ---  -
23 0    gender                4860 non-null  float64
24 1    age                   4860 non-null  float64
25 2    hypertension          4860 non-null

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25 float64
26 3    heart_disease      4860 non-null
   float64
27 4    ever_married      4860 non-null
   float64
28 5    work_type         4860 non-null
   float64
29 6    Residence_type    4860 non-null
   float64
30 7    avg_glucose_level 4860 non-null
   float64
31 8    bmi               4860 non-null
   float64
32 9    smoking_status    4860 non-null
   float64
33 dtypes: float64(10)
34 memory usage: 417.7 KB
35 None
36 C:\Users\vince\anaconda3\lib\site-packages\
   pandas\core\indexing.py:1736:
   SettingWithCopyWarning:
37 A value is trying to be set on a copy of a
   slice from a DataFrame.
38 Try using .loc[row_indexer,col_indexer] =
   value instead
39
40 See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/
   user\_guide/indexing.html#returning-a-view-
   versus-a-copy
41    isetter(loc, value[:, i].tolist())
42
43 Auto-encodeurs linéaires trop complets à 2
   couches avec sparsity et dropout de 0.05
44 La couche 1 possède 11 unités
45 2021-04-07 09:46:48.987709: I tensorflow/
   compiler/jit/xla_cpu_device.cc:41] Not
   creating XLA devices,

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45 tf_xla_enable_xla_devices not set
46 2021-04-07 09:46:48.988500: I tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:49] Successfully opened dynamic library
    nvcuda.dll
47 2021-04-07 09:46:49.016280: I tensorflow/core
    /common_runtime/gpu/gpu_device.cc:1720] Found
    device 0 with properties:
48 pciBusID: 0000:08:00.0 name: GeForce RTX 2080
    computeCapability: 7.5
49 coreClock: 1.71GHz coreCount: 46
    deviceMemorySize: 8.00GiB
    deviceMemoryBandwidth: 417.23GiB/s
50 2021-04-07 09:46:49.017319: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cudart64_110.dll'; dlerror: cudart64_110.dll
    not found
51 2021-04-07 09:46:49.017994: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cublas64_11.dll'; dlerror: cublas64_11.dll
    not found
52 2021-04-07 09:46:49.018707: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cublasLt64_11.dll'; dlerror: cublasLt64_11.
    dll not found
53 2021-04-07 09:46:49.019644: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cufft64_10.dll'; dlerror: cufft64_10.dll not
    found
54 2021-04-07 09:46:49.020393: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    curand64_10.dll'; dlerror: curand64_10.dll
    not found
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55 2021-04-07 09:46:49.021245: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cusolver64_10.dll'; dlerror: cusolver64_10.
    dll not found
56 2021-04-07 09:46:49.022093: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cusparse64_11.dll'; dlerror: cusparse64_11.
    dll not found
57 2021-04-07 09:46:49.022935: W tensorflow/
    stream_executor/platform/default/dso_loader.
    cc:60] Could not load dynamic library '
    cudnn64_8.dll'; dlerror: cudnn64_8.dll not
    found
58 2021-04-07 09:46:49.023073: W tensorflow/core
    /common_runtime/gpu/gpu_device.cc:1757]
    Cannot dlopen some GPU libraries. Please make
    sure the missing libraries mentioned above
    are installed properly if you would like to
    use GPU. Follow the guide at https://www.
    tensorflow.org/install/gpu for how to
    download and setup the required libraries for
    your platform.
59 Skipping registering GPU devices...
60 2021-04-07 09:46:49.023826: I tensorflow/core
    /platform/cpu_feature_guard.cc:142] This
    TensorFlow binary is optimized with oneAPI
    Deep Neural Network Library (oneDNN) to use
    the following CPU instructions in performance
    -critical operations: AVX2
61 To enable them in other operations, rebuild
    TensorFlow with the appropriate compiler
    flags.
62 2021-04-07 09:46:49.024722: I tensorflow/core
    /common_runtime/gpu/gpu_device.cc:1261]
    Device interconnect StreamExecutor with
    strength 1 edge matrix:
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63 2021-04-07 09:46:49.024859: I tensorflow/
    core/common_runtime/gpu/gpu_device.cc:1267
    ]
64 2021-04-07 09:46:49.024956: I tensorflow/
    compiler/jit/xla_gpu_device.cc:99] Not
    creating XLA devices,
    tf_xla_enable_xla_devices not set
65 2021-04-07 09:46:49.116375: I tensorflow/
    compiler/mlir/mlir_graph_optimization_pass.
    cc:116] None of the MLIR optimization passes
    are enabled (registered 2)
66 31/31 [=====] - 0s
    367us/step
67 31/31 [=====] - 0s
    366us/step
68 31/31 [=====] - 0s
    400us/step
69 31/31 [=====] - 0s
    367us/step
70 31/31 [=====] - 0s
    300us/step
71 31/31 [=====] - 0s
    367us/step
72 31/31 [=====] - 0s
    333us/step
73 31/31 [=====] - 0s
    433us/step
74 31/31 [=====] - 0s
    367us/step
75 31/31 [=====] - 0s
    333us/step
76 La couche 1 possède 12 unités
77 31/31 [=====] - 0s
    333us/step
78 31/31 [=====] - 0s
    333us/step
79 31/31 [=====] - 0s
    367us/step
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80 31/31 [=====] - 0s
    367us/step
81 31/31 [=====] - 0s
    367us/step
82 31/31 [=====] - 0s
    333us/step
83 31/31 [=====] - 0s
    367us/step
84 31/31 [=====] - 0s
    367us/step
85 31/31 [=====] - 0s
    367us/step
86 31/31 [=====] - 0s
    333us/step
87 La couche 1 possède 13 unités
88 31/31 [=====] - 0s
    400us/step
89 31/31 [=====] - 0s
    400us/step
90 31/31 [=====] - 0s
    367us/step
91 31/31 [=====] - 0s
    333us/step
92 31/31 [=====] - 0s
    367us/step
93 31/31 [=====] - 0s
    333us/step
94 31/31 [=====] - 0s
    333us/step
95 31/31 [=====] - 0s
    300us/step
96 31/31 [=====] - 0s
    300us/step
97 31/31 [=====] - 0s
    300us/step
98 La couche 1 possède 14 unités
99 31/31 [=====] - 0s
    367us/step
```

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100 31/31 [=====] - 0s
    333us/step
101 31/31 [=====] - 0s
    333us/step
102 31/31 [=====] - 0s
    333us/step
103 31/31 [=====] - 0s
    367us/step
104 31/31 [=====] - 0s
    333us/step
105 31/31 [=====] - 0s
    367us/step
106 31/31 [=====] - 0s
    333us/step
107 31/31 [=====] - 0s
    333us/step
108 31/31 [=====] - 0s
    367us/step
109 La couche 1 possède 15 unités
110 31/31 [=====] - 0s
    333us/step
111 31/31 [=====] - 0s
    367us/step
112 31/31 [=====] - 0s
    367us/step
113 31/31 [=====] - 0s
    400us/step
114 31/31 [=====] - 0s
    433us/step
115 31/31 [=====] - 0s
    400us/step
116 31/31 [=====] - 0s
    367us/step
117 31/31 [=====] - 0s
    400us/step
118 31/31 [=====] - 0s
    400us/step
119 31/31 [=====] - 0s
```

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119 433us/step
120 La couche 1 possède 16 unités
121 31/31 [=====] - 0s
    433us/step
122 31/31 [=====] - 0s
    400us/step
123 31/31 [=====] - 0s
    400us/step
124 31/31 [=====] - 0s
    400us/step
125 31/31 [=====] - 0s
    333us/step
126 31/31 [=====] - 0s
    367us/step
127 31/31 [=====] - 0s
    367us/step
128 31/31 [=====] - 0s
    367us/step
129 31/31 [=====] - 0s
    367us/step
130 31/31 [=====] - 0s
    367us/step
131 La couche 1 possède 17 unités
132 31/31 [=====] - 0s
    367us/step
133 31/31 [=====] - 0s
    367us/step
134 31/31 [=====] - 0s
    433us/step
135 31/31 [=====] - 0s
    400us/step
136 31/31 [=====] - 0s
    400us/step
137 31/31 [=====] - 0s
    467us/step
138 31/31 [=====] - 0s
    367us/step
139 31/31 [=====] - 0s
```



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139 367us/step
140 31/31 [=====] - 0s
    433us/step
141 31/31 [=====] - 0s
    367us/step
142 La couche 1 possède 18 unités
143 31/31 [=====] - 0s
    367us/step
144 31/31 [=====] - 0s
    400us/step
145 31/31 [=====] - 0s
    367us/step
146 31/31 [=====] - 0s
    367us/step
147 31/31 [=====] - 0s
    400us/step
148 31/31 [=====] - 0s
    367us/step
149 31/31 [=====] - 0s
    367us/step
150 31/31 [=====] - 0s
    333us/step
151 31/31 [=====] - 0s
    333us/step
152 31/31 [=====] - 0s
    400us/step
153 La couche 1 possède 19 unités
154 31/31 [=====] - 0s
    367us/step
155 31/31 [=====] - 0s
    367us/step
156 31/31 [=====] - 0s
    433us/step
157 31/31 [=====] - 0s
    367us/step
158 31/31 [=====] - 0s
    433us/step
159 31/31 [=====] - 0s
```

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159 400us/step
160 31/31 [=====] - 0s
    367us/step
161 31/31 [=====] - 0s
    400us/step
162 31/31 [=====] - 0s
    367us/step
163 31/31 [=====] - 0s
    367us/step
164 La couche 1 possède 20 unités
165 31/31 [=====] - 0s
    367us/step
166 31/31 [=====] - 0s
    367us/step
167 31/31 [=====] - 0s
    300us/step
168 31/31 [=====] - 0s
    367us/step
169 31/31 [=====] - 0s
    333us/step
170 31/31 [=====] - 0s
    333us/step
171 31/31 [=====] - 0s
    333us/step
172 31/31 [=====] - 0s
    333us/step
173 31/31 [=====] - 0s
    333us/step
174 31/31 [=====] - 0s
    333us/step
175 La couche 1 possède 21 unités
176 31/31 [=====] - 0s
    300us/step
177 31/31 [=====] - 0s
    333us/step
178 31/31 [=====] - 0s
    328us/step
179 31/31 [=====] - 0s
```

```
179 367us/step
180 31/31 [=====] - 0s
    333us/step
181 31/31 [=====] - 0s
    333us/step
182 31/31 [=====] - 0s
    300us/step
183 31/31 [=====] - 0s
    333us/step
184 31/31 [=====] - 0s
    333us/step
185 31/31 [=====] - 0s
    333us/step
186 La couche 1 possède 22 unités
187 31/31 [=====] - 0s
    400us/step
188 31/31 [=====] - 0s
    367us/step
189 31/31 [=====] - 0s
    333us/step
190 31/31 [=====] - 0s
    267us/step
191 31/31 [=====] - 0s
    300us/step
192 31/31 [=====] - 0s
    300us/step
193 31/31 [=====] - 0s
    300us/step
194 31/31 [=====] - 0s
    333us/step
195 31/31 [=====] - 0s
    300us/step
196 31/31 [=====] - 0s
    367us/step
197 La couche 1 possède 23 unités
198 31/31 [=====] - 0s
    367us/step
199 31/31 [=====] - 0s
```

```
199 333us/step
200 31/31 [=====] - 0s
    333us/step
201 31/31 [=====] - 0s
    333us/step
202 31/31 [=====] - 0s
    367us/step
203 31/31 [=====] - 0s
    327us/step
204 31/31 [=====] - 0s
    333us/step
205 31/31 [=====] - 0s
    333us/step
206 31/31 [=====] - 0s
    367us/step
207 31/31 [=====] - 0s
    333us/step
208 La couche 1 possède 24 unités
209 31/31 [=====] - 0s
    333us/step
210 31/31 [=====] - 0s
    333us/step
211 31/31 [=====] - 0s
    333us/step
212 31/31 [=====] - 0s
    333us/step
213 31/31 [=====] - 0s
    300us/step
214 31/31 [=====] - 0s
    333us/step
215 31/31 [=====] - 0s
    333us/step
216 31/31 [=====] - 0s
    300us/step
217 31/31 [=====] - 0s
    300us/step
218 31/31 [=====] - 0s
    267us/step
```

219 Scores moyens(précision moyenne et écart-
type) pour les auto-encodeurs linéaires trop
complets complets à 2 couches avec sparsity
et dropout:

220 {11: (0.112978043363495, 0.2274), 12: (0.
14793409443132668, 0.1895), 13: (0.
12871150019677596, 0.2372), 14: (0.
1521485399124616, 0.1242), 15: (0.
15115572489988902, 0.2129), 16: (0.
16942703277542603, 0.2169), 17: (0.
16545795991700482, 0.1727), 18: (0.
16591328554496418, 0.1507), 19: (0.
1663547304255096, 0.1601), 20: (0.
16458393009482086, 0.1789), 21: (0.
16043549127127882, 0.1401), 22: (0.
1472643379420258, 0.1508), 23: (0.
15646985700379093, 0.2261), 24: (0.
1483400970242505, 0.2561)}

221

222 Process finished with exit code 0

223