```
 1 C:\Users\vince\anaconda3\python.exe "D:/
   Documents/Choses école/UQAC/Session7/8INF436-
   Forage_de_donnees/TP3/main.py"
 2 2021-04-06 11:22:06.326034: 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 2021-04-06 11:22:06.326150: 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
37 Auto-encodeurs non-linéaires incomplets à 3
    couches
38 La couche 1 possède 2 unités
39 La couche 2 possède 2 unités
40 C:\Users\vince\anaconda3\lib\site-packages\
    pandas\core\indexing.py:1736:
    SettingWithCopyWarning:
41 A value is trying to be set on a copy of a
    slice from a DataFrame.
42 Try using .loc[row_indexer,col_indexer] =
    value instead
43
44 See the caveats in the documentation: https
    ://pandas.pydata.org/pandas-docs/stable/
    user_guide/indexing.html#returning-a-view-
    versus-a-copy
45   isetter(loc, value[:, i].tolist())
46 2021-04-06 11:22:08.221158: I tensorflow/
    compiler/jit/xla_cpu_device.cc:41] Not
```

46 creating XLA devices, tf_xla_enable_xla_devices not set

47 2021-04-06 11:22:08.221608: I tensorflow/stream_executor/platform/default/dso_loader.cc:49] Successfully opened dynamic library nvcuda.dll

48 2021-04-06 11:22:08.241932: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1720] Found device 0 with properties:

49 pciBusID: 0000:08:00.0 name: GeForce RTX 2080 computeCapability: 7.5

50 coreClock: 1.71GHz coreCount: 46 deviceMemorySize: 8.00GiB deviceMemoryBandwidth: 417.23GiB/s

51 2021-04-06 11:22:08.242765: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found

52 2021-04-06 11:22:08.243302: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cublas64_11.dll'; dlerror: cublas64_11.dll not found

53 2021-04-06 11:22:08.243816: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cublasLt64_11.dll'; dlerror: cublasLt64_11.dll not found

54 2021-04-06 11:22:08.244354: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cufft64_10.dll'; dlerror: cufft64_10.dll not found

55 2021-04-06 11:22:08.244868: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'curand64_10.dll'; dlerror: curand64_10.dll

55 not found

56 2021-04-06 11:22:08.245384: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cusolver64_10.dll'; dlerror: cusolver64_10.dll not found

57 2021-04-06 11:22:08.245895: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cusparse64_11.dll'; dlerror: cusparse64_11.dll not found

58 2021-04-06 11:22:08.246414: W tensorflow/stream_executor/platform/default/dso_loader.cc:60] Could not load dynamic library 'cudnn64_8.dll'; dlerror: cudnn64_8.dll not found

59 2021-04-06 11:22:08.246502: 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.

60 Skipping registering GPU devices...

61 2021-04-06 11:22:08.247051: 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

62 To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.

63 2021-04-06 11:22:08.247828: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1261] Device interconnect StreamExecutor with

63 strength 1 edge matrix:

64 2021-04-06 11:22:08.247935: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1267]

65 2021-04-06 11:22:08.248700: I tensorflow/compiler/jit/xla_gpu_device.cc:99] Not creating XLA devices, tf_xla_enable_xla_devices not set

66 2021-04-06 11:22:08.309243: I tensorflow/compiler/mlir/mlir_graph_optimization_pass.cc:116] None of the MLIR optimization passes are enabled (registered 2)

67 31/31 [==============================] - 0s 300us/step

68 31/31 [==============================] - 0s 300us/step

69 31/31 [==============================] - 0s 333us/step

70 31/31 [==============================] - 0s 300us/step

71 31/31 [==============================] - 0s 300us/step

72 31/31 [==============================] - 0s 333us/step

73 31/31 [==============================] - 0s 367us/step

74 31/31 [==============================] - 0s 300us/step

75 31/31 [==============================] - 0s 333us/step

76 31/31 [==============================] - 0s 300us/step

77 La couche 1 possède 2 unités

78 La couche 2 possède 3 unités

79 31/31 [==============================] - 0s 333us/step

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 89 La couche 1 possède 2 unités
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407 31/31 [==============================] - 0s
    333us/step
408 31/31 [==============================] - 0s
    333us/step
409 31/31 [==============================] - 0s
    333us/step
410 31/31 [==============================] - 0s
    367us/step
411 31/31 [==============================] - 0s
    333us/step
```

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412 31/31 [==============================] - 0s
    367us/step
413 La couche 1 possède 6 unités
414 La couche 2 possède 3 unités
415 31/31 [==============================] - 0s
    333us/step
416 31/31 [==============================] - 0s
    317us/step
417 31/31 [==============================] - 0s
    333us/step
418 31/31 [==============================] - 0s
    367us/step
419 31/31 [==============================] - 0s
    333us/step
420 31/31 [==============================] - 0s
    333us/step
421 31/31 [==============================] - 0s
    367us/step
422 31/31 [==============================] - 0s
    333us/step
423 31/31 [==============================] - 0s
    333us/step
424 31/31 [==============================] - 0s
    367us/step
425 La couche 1 possède 6 unités
426 La couche 2 possède 4 unités
427 31/31 [==============================] - 0s
    333us/step
428 31/31 [==============================] - 0s
    300us/step
429 31/31 [==============================] - 0s
    333us/step
430 31/31 [==============================] - 0s
    367us/step
431 31/31 [==============================] - 0s
    333us/step
432 31/31 [==============================] - 0s
    400us/step
```

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433 31/31 [==============================] - 0s
    334us/step
434 31/31 [==============================] - 0s
    333us/step
435 31/31 [==============================] - 0s
    333us/step
436 31/31 [==============================] - 0s
    333us/step
437 La couche 1 possède 6 unités
438 La couche 2 possède 5 unités
439 31/31 [==============================] - 0s
    300us/step
440 31/31 [==============================] - 0s
    333us/step
441 31/31 [==============================] - 0s
    300us/step
442 31/31 [==============================] - 0s
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443 31/31 [==============================] - 0s
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444 31/31 [==============================] - 0s
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445 31/31 [==============================] - 0s
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446 31/31 [==============================] - 0s
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447 31/31 [==============================] - 0s
    333us/step
448 31/31 [==============================] - 0s
    367us/step
449 La couche 1 possède 6 unités
450 La couche 2 possède 6 unités
451 31/31 [==============================] - 0s
    367us/step
452 31/31 [==============================] - 0s
    333us/step
453 31/31 [==============================] - 0s
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454 31/31 [=============================] - 0s
    367us/step
455 31/31 [=============================] - 0s
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456 31/31 [=============================] - 0s
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457 31/31 [=============================] - 0s
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458 31/31 [=============================] - 0s
    343us/step
459 31/31 [=============================] - 0s
    367us/step
460 31/31 [=============================] - 0s
    333us/step
461 La couche 1 possède 6 unités
462 La couche 2 possède 7 unités
463 31/31 [=============================] - 0s
    333us/step
464 31/31 [=============================] - 0s
    333us/step
465 31/31 [=============================] - 0s
    300us/step
466 31/31 [=============================] - 0s
    433us/step
467 31/31 [=============================] - 0s
    367us/step
468 31/31 [=============================] - 0s
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469 31/31 [=============================] - 0s
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470 31/31 [=============================] - 0s
    333us/step
471 31/31 [=============================] - 0s
    333us/step
472 31/31 [=============================] - 0s
    333us/step
473 La couche 1 possède 6 unités
474 La couche 2 possède 8 unités
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475 31/31 [==============================] - 0s
    333us/step
476 31/31 [==============================] - 0s
    333us/step
477 31/31 [==============================] - 0s
    333us/step
478 31/31 [==============================] - 0s
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479 31/31 [==============================] - 0s
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480 31/31 [==============================] - 0s
    367us/step
481 31/31 [==============================] - 0s
    367us/step
482 31/31 [==============================] - 0s
    333us/step
483 31/31 [==============================] - 0s
    300us/step
484 31/31 [==============================] - 0s
    300us/step
485 La couche 1 possède 7 unités
486 La couche 2 possède 2 unités
487 31/31 [==============================] - 0s
    300us/step
488 31/31 [==============================] - 0s
    300us/step
489 31/31 [==============================] - 0s
    367us/step
490 31/31 [==============================] - 0s
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491 31/31 [==============================] - 0s
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492 31/31 [==============================] - 0s
    400us/step
493 31/31 [==============================] - 0s
    300us/step
494 31/31 [==============================] - 0s
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495 31/31 [==============================] - 0s
    333us/step
496 31/31 [==============================] - 0s
    333us/step
497 La couche 1 possède 7 unités
498 La couche 2 possède 3 unités
499 31/31 [==============================] - 0s
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500 31/31 [==============================] - 0s
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501 31/31 [==============================] - 0s
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502 31/31 [==============================] - 0s
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503 31/31 [==============================] - 0s
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504 31/31 [==============================] - 0s
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506 31/31 [==============================] - 0s
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507 31/31 [==============================] - 0s
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508 31/31 [==============================] - 0s
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509 La couche 1 possède 7 unités
510 La couche 2 possède 4 unités
511 31/31 [==============================] - 0s
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512 31/31 [==============================] - 0s
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513 31/31 [==============================] - 0s
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516 31/31 [==============================] - 0s
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520 31/31 [==============================] - 0s
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521 La couche 1 possède 7 unités
522 La couche 2 possède 5 unités
523 31/31 [==============================] - 0s
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524 31/31 [==============================] - 0s
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525 31/31 [==============================] - 0s
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526 31/31 [==============================] - 0s
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531 31/31 [==============================] - 0s
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533 La couche 1 possède 7 unités
534 La couche 2 possède 6 unités
535 31/31 [==============================] - 0s
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544 31/31 [==============================] - 0s
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545 La couche 1 possède 7 unités
546 La couche 2 possède 7 unités
547 31/31 [==============================] - 0s
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555 31/31 [==============================] - 0s
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556 31/31 [==============================] - 0s
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557 La couche 1 possède 7 unités

558 La couche 2 possède 8 unités

559 31/31 [==============================] - 0s
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560 31/31 [==============================] - 0s
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561 31/31 [==============================] - 0s
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566 31/31 [==============================] - 0s
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567 31/31 [==============================] - 0s
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568 31/31 [==============================] - 0s
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569 La couche 1 possède 8 unités

570 La couche 2 possède 2 unités

571 31/31 [==============================] - 0s
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572 31/31 [==============================] - 0s
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573 31/31 [==============================] - 0s
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579 31/31 [============================] - 0s
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580 31/31 [============================] - 0s
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581 La couche 1 possède 8 unités
582 La couche 2 possède 3 unités
583 31/31 [============================] - 0s
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584 31/31 [============================] - 0s
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591 31/31 [============================] - 0s
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592 31/31 [============================] - 0s
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593 La couche 1 possède 8 unités
594 La couche 2 possède 4 unités
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603 31/31 [==============================] - 0s
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604 31/31 [==============================] - 0s
    300us/step
605 La couche 1 possède 8 unités
606 La couche 2 possède 5 unités
607 31/31 [==============================] - 0s
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608 31/31 [==============================] - 0s
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609 31/31 [==============================] - 0s
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    333us/step
614 31/31 [==============================] - 0s
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615 31/31 [==============================] - 0s
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616 31/31 [==============================] - 0s
    333us/step
617 La couche 1 possède 8 unités
618 La couche 2 possède 6 unités
619 31/31 [==============================] - 0s
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620 31/31 [==============================] - 0s
    333us/step
621 31/31 [==============================] - 0s
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623 31/31 [==============================] - 0s
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626 31/31 [==============================] - 0s
    300us/step
627 31/31 [==============================] - 0s
    333us/step
628 31/31 [==============================] - 0s
    300us/step
629 La couche 1 possède 8 unités
630 La couche 2 possède 7 unités
631 31/31 [==============================] - 0s
    300us/step
632 31/31 [==============================] - 0s
    333us/step
633 31/31 [==============================] - 0s
    333us/step
634 31/31 [==============================] - 0s
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635 31/31 [==============================] - 0s
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636 31/31 [==============================] - 0s
    300us/step
637 31/31 [==============================] - 0s
    300us/step
638 31/31 [==============================] - 0s
    333us/step
639 31/31 [==============================] - 0s
    333us/step
```

640 31/31 [==============================] - 0s
333us/step

641 La couche 1 possède 8 unités

642 La couche 2 possède 8 unités

643 31/31 [==============================] - 0s
300us/step

644 31/31 [==============================] - 0s
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645 31/31 [==============================] - 0s
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646 31/31 [==============================] - 0s
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647 31/31 [==============================] - 0s
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648 31/31 [==============================] - 0s
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649 31/31 [==============================] - 0s
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650 31/31 [==============================] - 0s
300us/step

651 31/31 [==============================] - 0s
333us/step

652 31/31 [==============================] - 0s
333us/step

653 Scores moyens(précision moyenne et écart-
type) pour les auto-encodeurs non-linéaires
incomplets à 3 couches:

654 {'2,2': (0.1418781813937279, 0.1364), '2,3
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09793334048218816, 0.3964)}

655
656 Process finished with exit code 0
657