Matériel supplémentaire

1 Identifiants des séries temporelles

Table 1: Identifiants des séries SVDB

800	801	802	803	804	805	806	807
808	809	810	811	812	820	821	822
823	824	825	826	827	828	829	840
841	842	843	844	845	846	847	848
849	850	851	852	853	854	855	856
857	858	859	860	861	862	863	864
866	867	868	869	870	871	872	873
874	875	876	877	878	879	880	882
883	884	885	886	887	888	889	890
891	892	893	894				

Table 2: Identifiants des séries AIOPS

KPI-4d2af31a-9916-3d9f-8a8e-8a268a48c095 KPI-55f8b8b8-b659-38df-b3df-e4a5a8a54bc9 KPI-43115f2a-baeb-3b01-96f7-4ea14188343c KPI-a8c06b47-cc41-3738-9110-12df0ee4c721 KPI-c69a50cf-ee03-3bd7-831e-407d36c7ee91 KPI-da10a69f-d836-3baa-ad40-3e548ecf1fbd KPI-57051487-3a40-3828-9084-a12f7f23ee38

KPI-6efa3a07-4544-34a0-b921-a155bd1a05e8 KPI-7103fa0f-cac4-314f-addc-866190247439 KPI-a07ac296-de40-3a7c-8df3-91f642cc14d0 KPI-ab216663-dcc2-3a24-b1ee-2c3e550e06c9 KPI-c02607e8-7399-3dde-9d28-8a8da5e5d251 KPI-f0932edd-6400-3e63-9559-0a9860a1baa9

Table 3: Identifiants des séries NormA

Discords_annsgun.test
Discords_dutch_power_demand.test
Discords_patient_respiration1.test
Discords_patient_respiration2.test
Discords_marotta_valve_tek_14.test

Table 4: Identifiants des séries NAB

$NAB_data_CloudWatch_2$		
$NAB_data_CloudWatch_4$		
$NAB_data_CloudWatch_6$		
$NAB_{data}CloudWatch_{9}$		
$NAB_{data_CloudWatch_11}$		
$NAB_data_CloudWatch_13$		
$NAB_{data}CloudWatch_{15}$		
$NAB_{data_CloudWatch_17}$		
$NAB_{data}Exchange_{2}$		
$NAB_{data}Exchange_{4}$		
$NAB_{data}Exchange_{6}$		
$NAB_data_KnownCause_2$		
$NAB_{data}KnownCause_{4}$		
$NAB_data_KnownCause_6$		
$NAB_data_Traffic_1$		
$NAB_{data_Traffic_3}$		
$NAB_{data_Traffic_5}$		
$NAB_{data_Traffic_7}$		
$NAB_data_tweets_2$		
$NAB_{data_tweets_4}$		
$NAB_{-}data_{-}tweets_{-}6$		
$NAB_{data_tweets_8}$		
$NAB_data_tweets_10$		

Table 5: Identifiants des séries UCR

```
001\_UCR\_Anomaly\_DISTORTED1sddb40\_35000\_52000\_52620
      002\_UCR\_Anomalv\_DISTORTED2sddb40\_35000\_56600\_56900
      003_UCR_Anomaly_DISTORTED3sddb40_35000_46600_46900
       004_UCR_Anomaly_DISTORTEDBIDMC1_2500_5400_5600
005_UCR_Anomaly_DISTORTEDCIMIS44AirTemperature1_4000_5391_5392
006_UCR_Anomaly_DISTORTEDCIMIS44AirTemperature2_4000_5703_5727
007\_UCR\_Anomaly\_DISTORTEDCIMIS44AirTemperature 3\_4000\_6520\_6544
008_UCR_Anomaly_DISTORTEDCIMIS44AirTemperature4_4000_5549_5597
009_UCR_Anomaly_DISTORTEDCIMIS44AirTemperature5_4000_4852_4900
010_UCR_Anomaly_DISTORTEDCIMIS44AirTemperature6_4000_6006_6054
       011_UCR_Anomaly_DISTORTEDECG1_10000_11800_12100
       012_UCR_Anomaly_DISTORTEDECG2_15000_16000_16100
       013_UCR_Anomaly_DISTORTEDECG3_15000_16000_16100
       014_UCR_Anomaly_DISTORTEDECG3_8000_17000_17100
       015_UCR_Anomaly_DISTORTEDECG4_5000_16800_17100
       016_UCR_Anomaly_DISTORTEDECG4_5000_16900_17100
       017_UCR_Anomaly_DISTORTEDECG4_5000_17000_17100
       018_UCR_Anomaly_DISTORTEDECG4_8000_17000_17100
 019\_UCR\_Anomaly\_DISTORTEDGP711MarkerLFM5z1\_5000\_6168\_6212
 020\_UCR\_Anomaly\_DISTORTEDGP711MarkerLFM5z2\_5000\_7175\_7388
 021\_UCR\_Anomaly\_DISTORTEDGP711MarkerLFM5z3\_5000\_5948\_5993
```

```
022_UCR_Anomaly_DISTORTEDGP711MarkerLFM5z4_4000_6527_6645
  023\_UCR\_Anomaly\_DISTORTEDGP711MarkerLFM5z5\_5000\_8612\_8716
   024_UCR_Anomaly_DISTORTEDInternalBleeding10_3200_4526_4556
   025\_UCR\_Anomaly\_DISTORTEDInternalBleeding 14\_2800\_5607\_5634
   026_UCR_Anomaly_DISTORTEDInternalBleeding15_1700_5684_5854
   027_UCR_Anomaly_DISTORTEDInternalBleeding16_1200_4187_4199
   028_UCR_Anomaly_DISTORTEDInternalBleeding17_1600_3198_3309
   029\_UCR\_Anomaly\_DISTORTEDInternalBleeding 18\_2300\_4485\_4587
   030_UCR_Anomaly_DISTORTEDInternalBleeding19_3000_4187_4197
   031\_UCR\_Anomaly\_DISTORTEDInternalBleeding 20\_2700\_5759\_5919
   032_UCR_Anomaly_DISTORTEDInternalBleeding4_1000_4675_5033
   033\_UCR\_Anomaly\_DISTORTEDInternalBleeding 5\_4000\_6200\_6370
   034_UCR_Anomaly_DISTORTEDInternalBleeding6_1500_3474_3629
    035_UCR_Anomaly_DISTORTEDInternalBleeding8_2500_5865_5974
    036_UCR_Anomaly_DISTORTEDInternalBleeding9_4200_6599_6681
037\_UCR\_Anomaly\_DISTORTEDLab2Cmac011215EPG1\_5000\_17210\_17260
038_UCR_Anomaly_DISTORTED Lab2Cmac011215EPG2_5000_27862_27932
039_UCR_Anomaly_DISTORTEDLab2Cmac011215EPG3_5000_16390_16420
040_UCR_Anomaly_DISTORTEDLab2Cmac011215EPG4_6000_17390_17520
041_UCR_Anomaly_DISTORTEDLab2Cmac011215EPG5_7000_17390_17520
042_UCR_Anomaly_DISTORTEDLab2Cmac011215EPG6_7000_12190_12420
043\_UCR\_Anomaly\_DISTORTEDMesoplodonDensirostris\_10000\_19280\_19440
   044_UCR_Anomaly_DISTORTEDPowerDemand1_9000_18485_18821
   045_UCR_Anomaly_DISTORTEDPowerDemand2_14000_23357_23717
   046_UCR_Anomaly_DISTORTEDPowerDemand3_16000_23405_23477
   047\_UCR\_Anomaly\_DISTORTEDPowerDemand4\_18000\_24005\_24077
   048_UCR_Anomaly_DISTORTEDTkeepFifthMARS_3500_5988_6085
   049\_UCR\_Anomaly\_DISTORTEDT keepFirstMARS\_3500\_5365\_5380
   050_UCR_Anomaly_DISTORTEDTkeepForthMARS_3500_5988_6085
   051\_UCR\_Anomaly\_DISTORTEDT keep SecondMARS\_3500\_9330\_9340
   052_UCR_Anomaly_DISTORTEDTkeepThirdMARS_3500_4711_4809
  053\_UCR\_Anomaly\_DISTORTEDWalkingAceleration1\_1500\_2764\_2995
  054_UCR_Anomaly_DISTORTEDWalkingAceleration5_2700_5920_5979
     055_UCR_Anomaly_DISTORTEDapneaecg2_10000_20950_21100
      056_UCR_Anomaly_DISTORTEDapneaecg3_5000_11111_11211
      057\_UCR\_Anomaly\_DISTORTED apneaecg4\_6000\_16000\_16100
      058_UCR_Anomaly_DISTORTEDapneaecg_10000_12240_12308
       059\_UCR\_Anomaly\_DISTORTEDgait1\_20000\_38500\_38800
       060\_UCR\_Anomaly\_DISTORTEDgait2\_22000\_46500\_46800
        061\_UCR\_Anomaly\_DISTORTEDgait3\_24500\_59900\_60500
     062_UCR_Anomaly_DISTORTEDgaitHunt1_18500_33070_33180
     063_UCR_Anomaly_DISTORTEDgaitHunt2_18500_31200_31850
     064_UCR_Anomaly_DISTORTEDgaitHunt3_23400_38400_39200
      065_UCR_Anomaly_DISTORTEDinsectEPG1_3000_7000_7030
      066_UCR_Anomaly_DISTORTEDinsectEPG2_3700_8000_8025
      067\_UCR\_Anomaly\_DISTORTED insect EPG3\_5200\_7000\_7050
      068_UCR_Anomaly_DISTORTEDinsectEPG4_1300_6508_6558
      069_UCR_Anomaly_DISTORTEDinsectEPG5_3200_8500_8501
   070_UCR_Anomaly_DISTORTEDltstdbs30791AI_17555_52600_52800
```

```
071_UCR_Anomaly_DISTORTEDltstdbs30791AS_23000_52600_52800
072\_UCR\_Anomaly\_DISTORTEDltstdbs30791ES\_20000\_52600\_52800
    073_UCR_Anomaly_DISTORTEDpark3m_60000_72150_72495
 074\_UCR\_Anomaly\_DISTORTEDqtdbSel1005V\_4000\_12400\_12800
075_UCR_Anomaly_DISTORTEDqtdbSel100MLII_4000_13400_13800
076_UCR_Anomaly_DISTORTEDresperation10_48000_130700_131880
077\_UCR\_Anomaly\_DISTORTED resperation 11\_58000\_110800\_110801
078\_UCR\_Anomaly\_DISTORTED resperation 1\_100000\_110260\_110412
079\_UCR\_Anomaly\_DISTORTED resperation 2\_30000\_168250\_168250
080_UCR_Anomaly_DISTORTEDresperation2_30000_168250_168251
081_UCR_Anomaly_DISTORTEDresperation3_45000_158250_158251
083\_UCR\_Anomaly\_DISTORTED resperation 9\_38000\_143411\_143511
 084\_UCR\_Anomalv\_DISTORTEDs20101mML2\_12000\_35774\_35874
   085_UCR_Anomaly_DISTORTEDs20101m_10000_35774_35874
    086\_UCR\_Anomaly\_DISTORTEDsddb49\_20000\_67950\_68200
 087\_UCR\_Anomaly\_DISTORTEDsel 840 mECG1\_17000\_51370\_51740
 088_UCR_Anomaly_DISTORTEDsel840mECG2_20000_49370_49740
 089_UCR_Anomaly_DISTORTEDtiltAPB1_100000_114283_114350
  090_UCR_Anomaly_DISTORTEDtiltAPB2_50000_124159_124985
  091_UCR_Anomaly_DISTORTEDtiltAPB3_40000_114000_114370
   092_UCR_Anomaly_DISTORTEDtiltAPB4_20000_67995_67996
      093\_UCR\_Anomaly\_NOISE1sddb40\_35000\_52000\_52620
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        096_UCR_Anomaly_NOISEECG4_5000_16900_17100
  097\_UCR\_Anomaly\_NOISEGP711MarkerLFM5z3\_5000\_5948\_5993
   098_UCR_Anomaly_NOISEInternalBleeding16_1200_4187_4199
   099\_UCR\_Anomaly\_NOISEInternalBleeding 6\_1500\_3474\_3629
100_UCR_Anomaly_NOISELab2Cmac011215EPG1_5000_17210_17260
101_UCR_Anomaly_NOISELab2Cmac011215EPG4_6000_17390_17520
102_UCR_Anomaly_NOISEMesoplodonDensirostris_10000_19280_19440
   103\_UCR\_Anomaly\_NOISET keep ThirdMARS\_3500\_4711\_4809
      104_UCR_Anomaly_NOISEapneaecg4_6000_16000_16100
        105_UCR_Anomaly_NOISEgait3_24500_59900_60500
     106_UCR_Anomaly_NOISEgaitHunt2_18500_31200_31850
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   108_UCR_Anomaly_NOISEresperation2_30000_168250_168250
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         111_UCR_Anomaly_3sddb40_35000_46600_46900
           112_UCR_Anomaly_BIDMC1_2500_5400_5600
   113_UCR_Anomaly_CIMIS44AirTemperature1_4000_5391_5392
   114_UCR_Anomaly_CIMIS44AirTemperature2_4000_5703_5727
   115_UCR_Anomaly_CIMIS44AirTemperature3_4000_6520_6544
   116_UCR_Anomaly_CIMIS44AirTemperature4_4000_5549_5597
   117\_UCR\_Anomaly\_CIMIS44AirTemperature5\_4000\_4852\_4900
   118_UCR_Anomaly_CIMIS44AirTemperature6_4000_6006_6054
          119_UCR_Anomaly_ECG1_10000_11800_12100
          120_UCR_Anomaly_ECG2_15000_16000_16100
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 128_UCR_Anomaly_GP711MarkerLFM5z2_5000_7175_7388
  129_UCR_Anomaly_GP711MarkerLFM5z3_5000_5948_5993
  130_UCR_Anomaly_GP711MarkerLFM5z4_4000_6527_6645
  131_UCR_Anomaly_GP711MarkerLFM5z5_5000_8612_8716
    132\_UCR\_Anomaly\_Internal leeding 10\_3200\_4526\_4556
   133_UCR_Anomaly_InternalBleeding14_2800_5607_5634
   134_UCR_Anomaly_InternalBleeding15_1700_5684_5854
   135_UCR_Anomaly_InternalBleeding16_1200_4187_4199
   136_UCR_Anomaly_InternalBleeding17_1600_3198_3309
   137_UCR_Anomaly_InternalBleeding18_2300_4485_4587
   138_UCR_Anomaly_InternalBleeding19_3000_4187_4197
   139_UCR_Anomaly_InternalBleeding20_2700_5759_5919
    140_UCR_Anomaly_Internalleeding4_1000_4675_5033
    141_UCR_Anomaly_InternalBleeding5_4000_6200_6370
    142\_UCR\_Anomaly\_InternalBleeding 6\_1500\_3474\_3629
    143_UCR_Anomaly_InternalBleeding8_2500_5865_5974
    144_UCR_Anomaly_InternalBleeding9_4200_6599_6681
145_UCR_Anomaly_Lab2Cmac011215EPG1_5000_17210_17260
146\_UCR\_Anomaly\_Lab2Cmac011215EPG2\_5000\_27862\_27932
147_UCR_Anomaly_Lab2Cmac011215EPG3_5000_16390_16420
148\_UCR\_Anomaly\_Lab2Cmac011215EPG4\_6000\_17390\_17520
149_UCR_Anomaly_Lab2Cmac011215EPG5_7000_17390_17520
150_UCR_Anomaly_Lab2Cmac011215EPG6_7000_12190_12420
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    152_UCR_Anomaly_PowerDemand1_9000_18485_18821
   153_UCR_Anomaly_PowerDemand2_14000_23357_23717
   154_UCR_Anomaly_PowerDemand3_16000_23405_23477
   155_UCR_Anomaly_PowerDemand4_18000_24005_24077
    156\_UCR\_Anomaly\_TkeepFifthMARS\_3500\_5988\_6085
    157_UCR_Anomaly_TkeepFirstMARS_3500_5365_5380
   158\_UCR\_Anomaly\_TkeepForthMARS\_3500\_5988\_6085
   159_UCR_Anomaly_TkeepSecondMARS_3500_9330_9340
   160_UCR_Anomaly_TkeepThirdMARS_3500_4711_4809
  161_UCR_Anomaly_WalkingAceleration1_1500_2764_2995
  162_UCR_Anomaly_WalkingAceleration5_2700_5920_5979
      163_UCR_Anomaly_apneaecg2_10000_20950_21100
      164_UCR_Anomaly_apneaecg3_5000_11111_11211
      165_UCR_Anomaly_apneaecg4_6000_16000_16100
      166\_UCR\_Anomaly\_apneaecg\_10000\_12240\_12308
        167_UCR_Anomaly_gait1_20000_38500_38800
        168_UCR_Anomaly_gait2_22000_46500_46800
        169_UCR_Anomaly_gait3_24500_59900_60500
```

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     173_UCR_Anomaly_insectEPG1_3000_7000_7030
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     175_UCR_Anomaly_insectEPG3_5200_7000_7050
     176_UCR_Anomaly_insectEPG4_1300_6508_6558
     177_UCR_Anomaly_insectEPG5_3200_8500_8501
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  179_UCR_Anomaly_ltstdbs30791AS_23000_52600_52800
  180_UCR_Anomaly_ltstdbs30791ES_20000_52600_52800
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  185_UCR_Anomaly_resperation11_58000_110800_110801
  186_UCR_Anomaly_resperation1_100000_110260_110412
   187_UCR_Anomaly_resperation2_30000_168250_168250
   188_UCR_Anomaly_resperation2_30000_168250_168251
   189_UCR_Anomaly_resperation3_45000_158250_158251
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      194_UCR_Anomaly_sddb49_20000_67950_68200
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   196_UCR_Anomaly_sel840mECG2_20000_49370_49740
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    198_UCR_Anomaly_tiltAPB2_50000_124159_124985
    199_UCR_Anomaly_tiltAPB3_40000_114000_114370
     200_UCR_Anomaly_tiltAPB4_20000_67995_67996
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    203_UCR_Anomaly_CHARISfive_10500_10995_11028
    204_UCR_Anomaly_CHARISfive_12412_15000_15070
    205\_UCR\_Anomaly\_CHARIS five\_9812\_28995\_29085
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     209_UCR_Anomaly_Fantasia_19000_26970_27270
210_UCR_Anomaly_Italianpowerdemand_36123_74900_74996
211_UCR_Anomaly_Italianpowerdemand_38113_39240_39336
 212_UCR_Anomaly_Italianpowerdemand_8913_29480_29504
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218_UCR_Anomaly_STAFFIIIDatabase_41117_210720_211370
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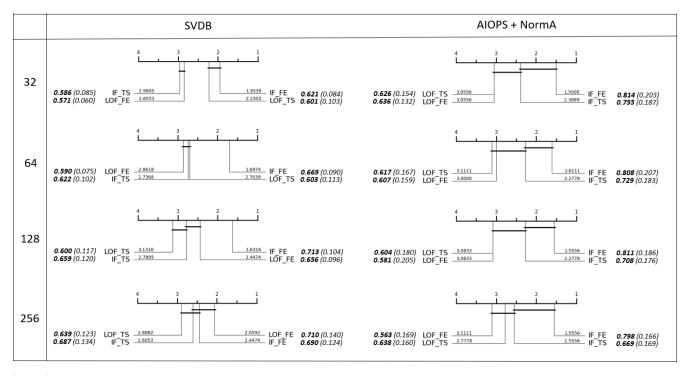
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2 Résultats des prétraitements

Table 6: Comparaison, en termes d'AUCROC, des rangs moyens des normalisations selon l'algorithme appliqué et l'approche utilisée ("TS" : application du fenêtrage, "FE" : application du fenêtrage et du calcul de statistiques).

			Sans Normalisation	MinMax	MedianIQR	MeanStd
SVDB	IF	TS	2.079	1.893	3.360	2.668
		FE	1.887	2.487	3.128	2.498
	LOF	TS	2.278	2.679	2.141	2.901
		FE	1.880	2.258	2.258	3.604
AIOPS + NormA	IF	TS	1.889	2.285	2.486	3.340
		FE	2.104	2.938	2.556	2.403
	LOF	TS	1.694	2.986	2.604	2.715
		FE	2.618	2.611	2.465	2.306

3 Comparaison des performances des algorithmes IF et LOF



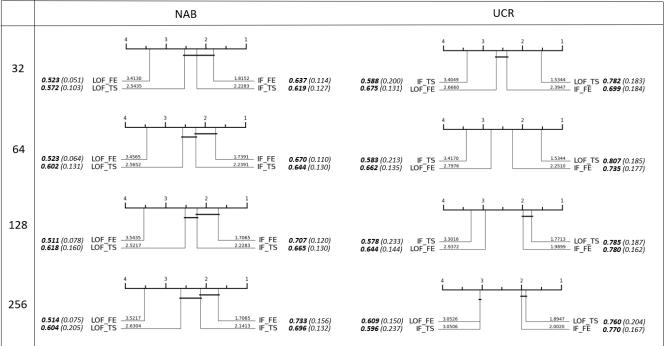


Figure 1: Diagrammes de différence critique