

Euclidean_Distance_Stock

September 29, 2021

1 Euclidean Distance

1.1 Euclidean distance between two vectors, A and B

1.2 Formula: $\sqrt{\sum(A_i - B_i)^2}$

```
[1]: import numpy as np
      from numpy.linalg import norm

      import warnings
      warnings.filterwarnings("ignore")

      # yfinance is used to fetch data
      import yfinance as yf
      yf.pdr_override()
```

```
[2]: symbol = 'AMD'

      start = '2018-01-01'
      end = '2019-01-01'

      # Read data
      dataset = yf.download(symbol, start, end)

      # View Columns
      dataset.head()
```

[*****100%*****] 1 of 1 completed

```
[2]:
```

| | Open | High | Low | Close | Adj Close | Volume |
|------------|-------|-------|-------|-------|-----------|-----------|
| Date | | | | | | |
| 2018-01-02 | 10.42 | 11.02 | 10.34 | 10.98 | 10.98 | 44146300 |
| 2018-01-03 | 11.61 | 12.14 | 11.36 | 11.55 | 11.55 | 154066700 |
| 2018-01-04 | 12.10 | 12.43 | 11.97 | 12.12 | 12.12 | 109503000 |
| 2018-01-05 | 12.19 | 12.22 | 11.66 | 11.88 | 11.88 | 63808900 |
| 2018-01-08 | 12.01 | 12.30 | 11.85 | 12.28 | 12.28 | 63346000 |

```
[3]: Open = np.array(dataset['Open'])
      Close = np.array(dataset['Adj Close'])
```

```
[4]: Open
```

```
[4]: array([10.42000008, 11.60999966, 12.10000038, 12.18999958, 12.01000023,
          12.          , 11.63000011, 12.06999969, 11.81999969, 12.05000019,
          11.89999962, 12.18000031, 12.56000042, 12.60999966, 12.81999969,
          13.02000046, 12.77999973, 12.69999981, 13.13000011, 13.11999989,
          13.23999977, 13.61999989, 13.05000019, 12.05000019, 11.03999996,
          11.69999981, 11.72000027, 11.53999996, 11.47000027, 11.60000038,
          11.72000027, 12.39999962, 12.10999966, 11.72000027, 12.11999989,
          11.81999969, 11.94999981, 12.14000034, 12.43000031, 12.65999985,
          12.26000023, 11.67000008, 11.68999958, 12.01000023, 11.57999992,
          12.39999962, 12.02999973, 11.76000023, 11.5          , 11.69999981,
          11.43000031, 11.48999977, 11.40999985, 11.40999985, 11.15999985,
          11.10000038, 10.90999985, 10.71000004, 10.51000023, 9.98999977,
          9.93999958, 9.98999977, 9.63000011, 9.07999992, 10.05000019,
          9.82999992, 9.75          , 9.75          , 9.86999989, 9.97999954,
          10.19999981, 10.          , 10.27999973, 10.51000023, 10.18000031,
          10.05000019, 10.09000015, 10.18999958, 10.06000042, 10.86999989,
          11.19999981, 11.06000042, 10.82999992, 11.10000038, 10.89999962,
          10.88000011, 11.31999969, 11.48999977, 11.64999962, 11.97999954,
          11.89000034, 12.14000034, 12.18000031, 12.64000034, 12.78999996,
          13.06000042, 13.25          , 13.          , 12.93000031, 13.06000042,
          13.39999962, 13.44999981, 13.47999954, 13.73999977, 13.97999954,
          14.76000023, 14.85000038, 15.06999969, 15.82999992, 14.52000046,
          15.21000004, 15.84000015, 15.81000042, 16.62000084, 16.05999947,
          16.18000031, 16.85000038, 16.82999992, 16.64999962, 15.77999973,
          15.64000034, 15.31999969, 15.64999962, 14.85000038, 15.40999985,
          14.80000019, 15.21000004, 15.13000011, 15.52000046, 16.72999954,
          16.59000015, 16.14999962, 16.40999985, 16.68000031, 16.42000008,
          16.5          , 16.94000053, 16.70999908, 16.65999985, 16.46999931,
          16.75          , 16.29999924, 17.15999985, 19.06999969, 19.39999962,
          19.35000038, 18.34000015, 18.17000008, 18.94000053, 18.88999939,
          19.53000069, 19.45999908, 19.57999992, 19.09000015, 19.15999985,
          19.96999931, 19.86000061, 19.86000061, 19.12000084, 19.79000092,
          19.97999954, 20.28000069, 21.19000053, 22.90999985, 24.94000053,
          25.51000023, 24.36000061, 25.29000092, 24.88999939, 25.62000084,
          29.40999985, 28.12000084, 26.95999908, 28.14999962, 30.02000046,
          29.90999985, 33.15999985, 31.43000031, 31.75          , 32.99000168,
          31.52000046, 32.09999847, 31.19000053, 31.12999916, 33.18000031,
          32.40000153, 31.86000061, 32.24000168, 30.69000053, 30.72999954,
          29.04000092, 27.98999977, 28.06999969, 26.72999954, 26.14999962,
          27.37999916, 24.73999977, 26.77000046, 26.37999916, 26.62999916,
          28.40999985, 27.07999992, 27.03000069, 24.45999908, 24.18000031,
          25.04000092, 17.92000008, 18.48999977, 18.20999908, 16.37999916,
```

```

17.87000084, 18.40999985, 20.59000015, 20.12000084, 19.5
,
21.42000008, 21.77000046, 20.77000046, 20.68000031, 19.28000069,
20.18000031, 20.71999931, 19.87000084, 20.39999962, 17.39999962,
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21.19000053, 21.29999924, 22.47999954, 23.35000038, 20.21999931,
21.29999924, 19.35000038, 20.70999908, 20.31999969, 20.62999916,
19.57999992, 20.01000023, 19.14999962, 19.44000053, 18.11000061,
18.12000084, 16.52000046, 16.87999916, 17.43000031, 17.53000069,
18.14999962])

```

[5]: Close

```

[5]: array([10.97999954, 11.55000019, 12.11999989, 11.88000011, 12.27999973,
11.81999969, 11.96000004, 12.14000034, 12.02000046, 11.90999985,
12.18000031, 12.47000027, 12.59000015, 12.64999962, 12.93999958,
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13.73999977, 13.25
, 12.44999981, 11.56999969, 11.64999962,
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11.84000015, 12.06999969, 12.42000008, 12.52999973, 12.10999966,
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, 9.81000042,
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9.60999966, 9.52999973, 9.97999954, 9.81999969, 10.07999992,
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13.
, 12.98999977, 12.97999954, 13.10000038, 13.40999985,
13.53999996, 13.35999966, 13.81999969, 13.72999954, 14.39999962,
14.85000038, 14.85000038, 15.67000008, 14.89000034, 15.25
,
15.72999954, 15.85000038, 16.31999969, 16.25
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15.10999966, 15.5
, 14.97000027, 15.31000042, 14.98999977,
15.15999985, 15.
, 15.5
, 16.36000061, 16.61000061,
16.54999924, 16.27000046, 16.55999947, 16.27000046, 16.57999992,
16.87000084, 16.85000038, 16.70999908, 16.5
, 16.65999985,
16.19000053, 16.04999924, 18.35000038, 18.94000053, 19.42000008,
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19.55999947, 19.57999992, 19.10000038, 19.05999947, 19.72999954,
20.02000046, 19.70000076, 19.32999992, 19.77000046, 19.97999954,
20.39999962, 20.89999962, 22.29000092, 23.97999954, 25.26000023,
25.04999924, 25.20000076, 24.88999939, 25.17000008, 28.05999947,
28.51000023, 27.84000015, 27.37999916, 29.88999939, 30.10000038,

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32.20999908, 30.47999954, 32.72000122, 32.43000031, 31.93000031,  
31.20999908, 31.18000031, 31.02000046, 32.61000061, 32.56999969,  
32.18999863, 32.59000015, 30.88999939, 31.42000008, 29.02000046,  
28.43000031, 27.78000069, 27.35000038, 26.45999908, 27.23999977,  
25. , 25.29999924, 26.34000015, 26.26000023, 28.18000031,  
27.29999924, 26.62000084, 23.65999985, 25.03000069, 25.09000015,  
22.79000092, 19.27000046, 17.62999916, 16.85000038, 17.20000076,  
18.20999908, 20.21999931, 20.22999954, 19.89999962, 20.68000031,  
21.84000015, 21.20000076, 21.03000069, 19.03000069, 19.61000061,  
20.80999947, 21.48999977, 20.65999985, 19.11000061, 19.20999908,  
18.72999954, 19.37999916, 20.07999992, 21.04999924, 21.34000015,  
21.43000031, 21.29999924, 23.70999908, 21.12000084, 21.29999924,  
19.45999908, 19.98999977, 19.97999954, 20.47999954, 19.86000061,  
19.89999962, 18.82999992, 19.5 , 18.15999985, 17.94000053,  
16.93000031, 16.64999962, 17.89999962, 17.48999977, 17.81999969,  
18.45999908])
```

```
[6]: norm(Close - Open)
```

```
[6]: 11.503916527217696
```