LAPORAN GSTAR

TOPIK DALAM ANALISIS DATA DERET WAKTU

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SURABAYA

2020

Forcasting temperature of 3 different stations

- Data : data temperature dari http://dataonline.bmkg.go.id/home

	Perak.I	Perak.II	Juanda
1	28.9	29.5	29.0
2	29.0	29.2	28.5
3	27.3	27.2	25.6
4	27.7	28.0	27.6
5	29.1	29.7	29.2
6	30.4	30.4	28.9

- Korelasi data

```
> cor(data)
           Perak.I  Perak.II    Juanda
Perak.I  1.0000000 0.9495863 0.8814858
Perak.II 0.9495863 1.0000000 0.8819370
Juanda   0.8814858 0.8819370 1.0000000
```

- GSTAR dengan weight uniform
  - Weight uniform

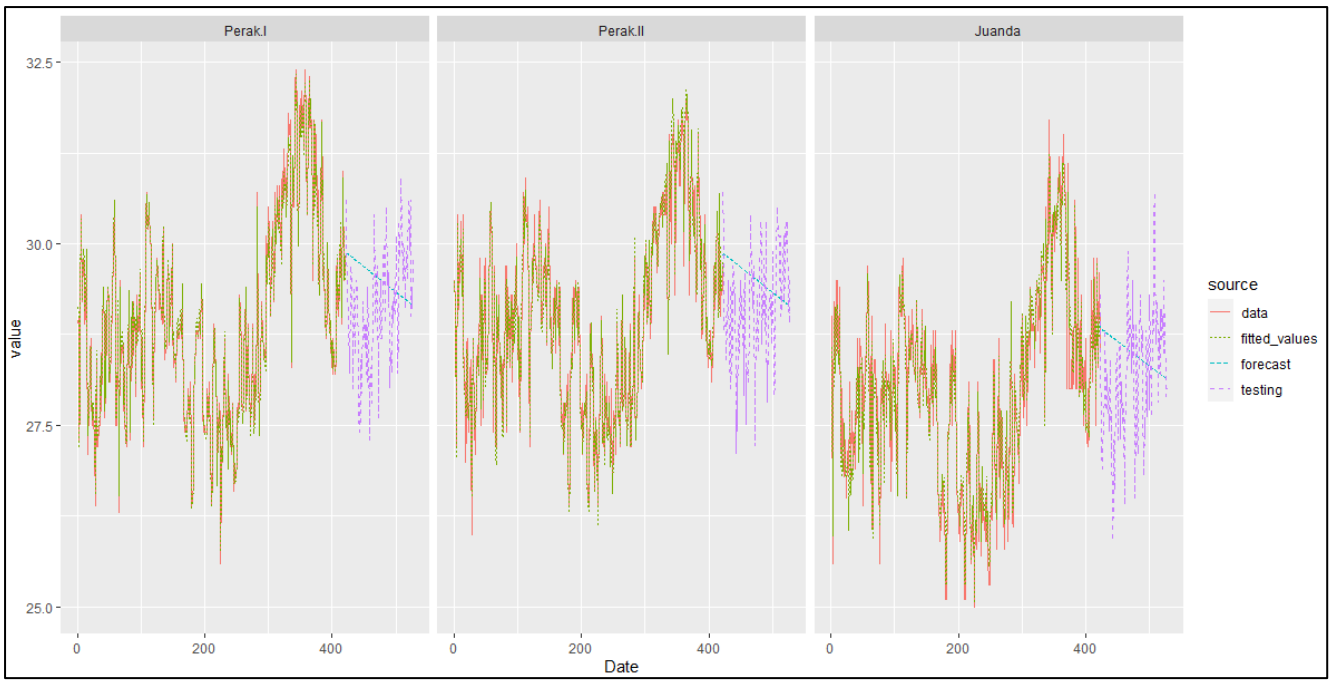
```
> weight_uniform
     [,1] [,2] [,3]
[1,]  0.0  0.5  0.5
[2,]  0.5  0.0  0.5
[3,]  0.5  0.5  0.0
```

  - Hasil Training

```
----------Performance training------------

MSE for all data =  0.5154806
MSE for each location :
  Perak.I  Perak.II    Juanda
0.4822518 0.4870102 0.5771798

MAPE for all data =  1.900834
MAPE for each location :
 Perak.I Perak.II   Juanda
1.797284 1.854074 2.051144
```

- Hasil Testing

```
----------Performance testing------------

MSE for all data =  0.9360444
MSE for each location :
  Perak.I  Perak.II    Juanda
0.9341923 0.8702308 1.0037101

MAPE for all data =  2.748507
MAPE for each location :
 Perak.I Perak.II   Juanda
2.762992 2.600131 2.882397
```



- Prediksi 5 data

```
> predict(fit, n = 5)
      Perak.I Perak.II   Juanda
[1,] 29.86634 29.84592 28.90100
[2,] 29.86712 29.86043 28.85422
[3,] 29.86332 29.85782 28.83606
[4,] 29.85772 29.85135 28.82586
[5,] 29.85136 29.84417 28.81797
```

- GSTAR dengan nilai korelasi sebagai weight
  - Weight berdasarkan nilai korelasi

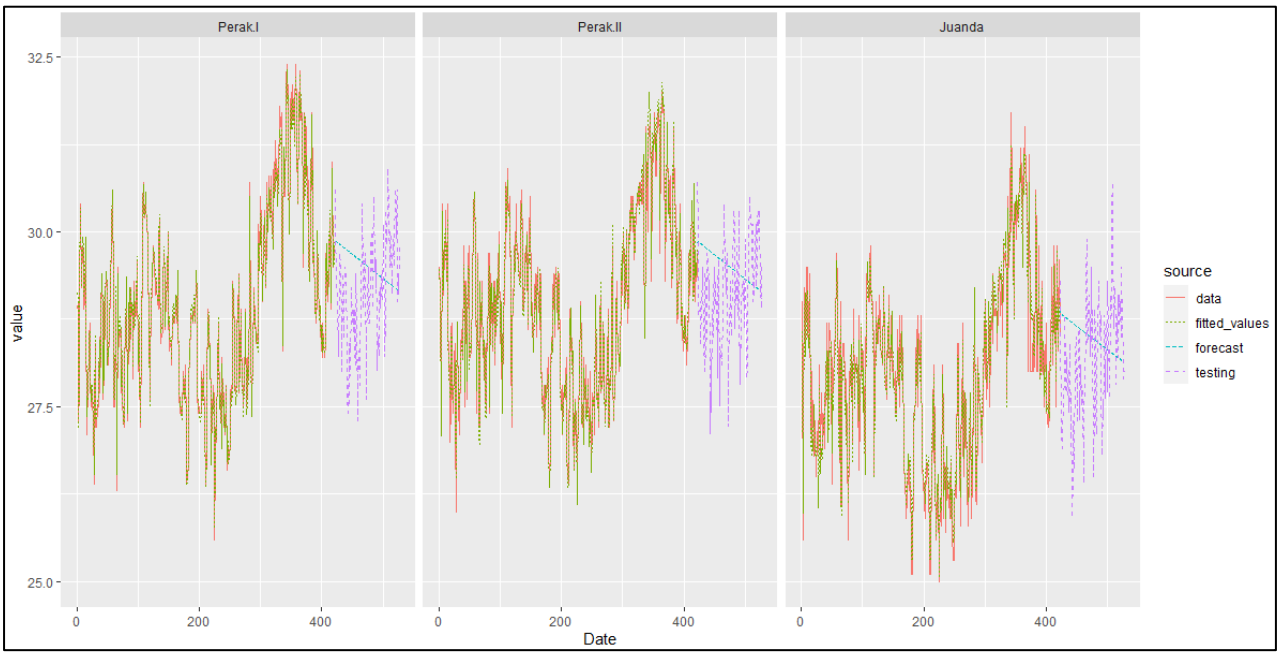
```
> weight_cor
           Perak.I  Perak.II    Juanda
Perak.I  0.5000000 0.4747931 0.4407429
Perak.II 0.4747931 0.5000000 0.4409685
Juanda   0.4407429 0.4409685 0.5000000
```

  - Hasil Training

```
----------Performance training-----------

MSE for all data =  0.5154706
MSE for each location :
  Perak.I  Perak.II    Juanda
0.4823492 0.4868837 0.5771789

MAPE for all data =  1.900645
MAPE for each location :
 Perak.I Perak.II   Juanda
1.797398 1.853399 2.051139
```

- Hasil Testing

```
----------Performance testing------------

MSE for all data =  0.9327662
MSE for each location :
  Perak.I  Perak.II    Juanda
0.9307215 0.8667233 1.0008539

MAPE for all data =  2.743146
MAPE for each location :
 Perak.I Perak.II   Juanda
2.757630 2.593201 2.878607
```



- Prediksi 5 data

```
> predict(fit2, n = 5)
      Perak.I Perak.II   Juanda
[1,] 29.86018 29.84209 28.89877
[2,] 29.86142 29.85608 28.85062
[3,] 29.85798 29.85321 28.83180
[4,] 29.85259 29.84660 28.82131
[5,] 29.84634 29.83938 28.81331
```

- GSTAR dengan jarak sebagai weight
  - Weight berdasarkan jarak

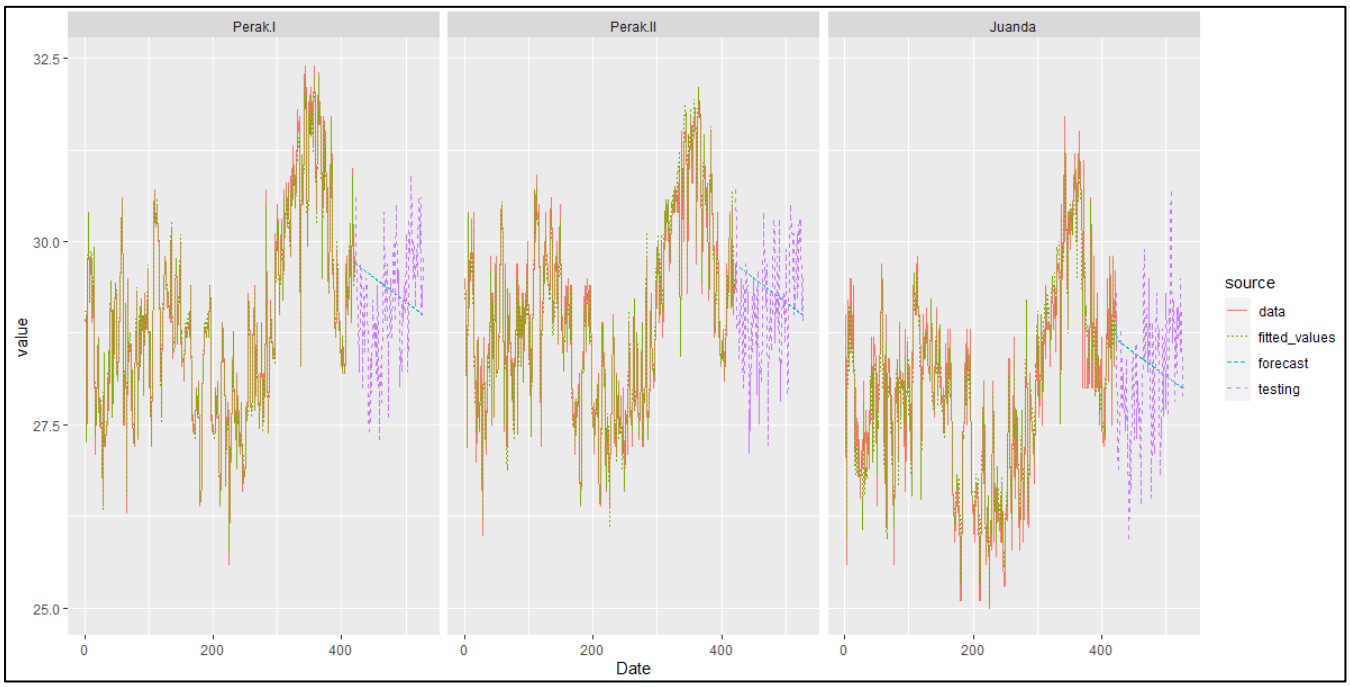
```
           [,1]       [,2]      [,3]
[1,] 0.00000000 0.44796558 0.2598018
[2,] 0.44419283 0.00000000 0.2401982
[3,] 0.05580717 0.05203442 0.0000000
```

  - Hasil Training

```
----------Performance training------------

MSE for all data =  0.5201234
MSE for each location :
  Perak.I  Perak.II    Juanda
0.4874847 0.4955482 0.5773372

MAPE for all data =  1.904706
MAPE for each location :
 Perak.I Perak.II   Juanda
1.797519 1.864729 2.051869
```

- Hasil Testing

```
----------Performance testing------------

MSE for all data =  0.8413433
MSE for each location :
  Perak.I  Perak.II    Juanda
0.8334035 0.7631673 0.9274590

MAPE for all data =  2.600861
MAPE for each location :
 Perak.I Perak.II   Juanda
2.592533 2.411467 2.798583
```



- Prediksi 5 data

```
> predict(fit3, n = 5)
      Perak.I Perak.II   Juanda
[1,] 29.70760 29.64885 28.83002
[2,] 29.69430 29.66885 28.73078
[3,] 29.68558 29.67201 28.68522
[4,] 29.67833 29.66891 28.66215
[5,] 29.67152 29.66349 28.64856
```