Forecasting of coronavirus COVID19 epidemic (SIR model)

DISCLAIMER: The model may fail is some situations. In particular, the model may fail in the initial phase and in when additional epidemic stages or outbreaks (not described by SIR model) are encountered. Use it at your own discretion.

Report

```
fprintf('Date: %s\n',datestr(date))
```

```
Date: 24-Mar-2020
```

```
aut = fitVirusCV19(@getDataNetherlands,'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Netherlands
  Day                           27
Estimated the SIR model parameters
  Contact rate (beta)           3.936 (1/day)
  Removal rate (gamma)          3.717 (1/day)
  Population size (N)           130223
  Initial number of cases (I0)  1
Basic reproduction number (R0)  1.059
Final state
  Final number of cases         14228
  Final number of susceptibles  115994
Daily forcast for 25-Mar-2020
  Total                         6294
  Increase                      734
Estimated logistic model parameters
  Epidemic size (K)             13713 (cases)
  Epidemic rate (r)             0.218738 (1/day)
  Initial doubling time         3.2 (day)
Estimated duration (days)
  Turning day                   28
  Acceleration   phase          9 (days)
  Deaceleration  phsee          9 (days)
  Total duration                19 (days)
Estimated datums
  Outbreak                      27-Feb-2020
  Start of acceleration         17-Mar-2020
  Turning point                 26-Mar-2020
  Start of steady growth        04-Apr-2020
  Start of ending phase         23-Apr-2020
Statistics
  Number of observations        27
  Degrees of freedom            23
  Root Mean Squared Error       36.1048
  R-Squared                     1
  Adjusted R-Squared            0.999
  F-statistics vs. zero model   17516.8
  p-value                       9.27996e-39
```

Method

Total cases weight	0.5
Infection rate weight	0.5
Objective function value	191.031
Exit condition (1=OK)	0