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(@getDataSerbia,'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Serbia
  Day                           16
Estimated the SIR model parameters
  Contact rate (beta)           0.424 (1/day)
  Removal rate (gamma)          0.215 (1/day)
  Population size (N)           3130
  Initial number of cases (I0)  7
Basic reproduction number (R0)  1.962
Final state
  Final number of cases         2468
  Final number of susceptibles  662
Daily forcast for 25-Mar-2020
  Total                         364
  Increase                      60
Estimated logistic model parameters
  Epidemic size (K)             2063 (cases)
  Epidemic rate (r)             0.208356 (1/day)
  Initial doubling time         3.3 (day)
Estimated duration (days)
  Turning day                   24
  Acceleration   phase          10 (days)
  Deaceleration  phsee          12 (days)
  Total duration                22 (days)
Estimated datums
  Outbreak                      09-Mar-2020
  Start of acceleration         23-Mar-2020
  Turning point                 02-Apr-2020
  Start of steady growth        14-Apr-2020
  Start of ending phase         05-May-2020
Statistics
  Number of observations        16
  Degrees of freedom            12
  Root Mean Squared Error       6.88625
  R-Squared                     0.996
  Adjusted R-Squared            0.994
  F-statistics vs. zero model   897.186
  p-value                       2.2382e-14
```

```
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      25.8517
  Exit condition (1=OK)         0
```