

Relazione Kalman Filter

Emanuele Gentiletti, Alessandro Caputo

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R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
from kalman_filter.kalman import kalman_filter
from kalman_filter.kalman_sim import kalman_simulation
import numpy as np
import random
print(inspect.getsource(kalman_filter))

## def kalman_filter(
##     state,
##     state_cov,
##     mea_cov,
##     control=0,
##     timedelta=1,
##     pnoise_cov=np.zeros((2, 2)),
## ):
##     measurement = yield
##     while True:
##         state = calculate_movement(state, timedelta, control)
##         state_cov = get_a_priori_error_cov(state_cov, timedelta, pnoise_cov)
##         gain = get_gain(state_cov, mea_cov)
##         state = get_a_posteriori_estimate(state, measurement, gain)
##         state_cov = get_a_posteriori_error_cov(state_cov, gain)
##         measurement = yield KalmanResult(state, state_cov, gain)
```

Including Plots

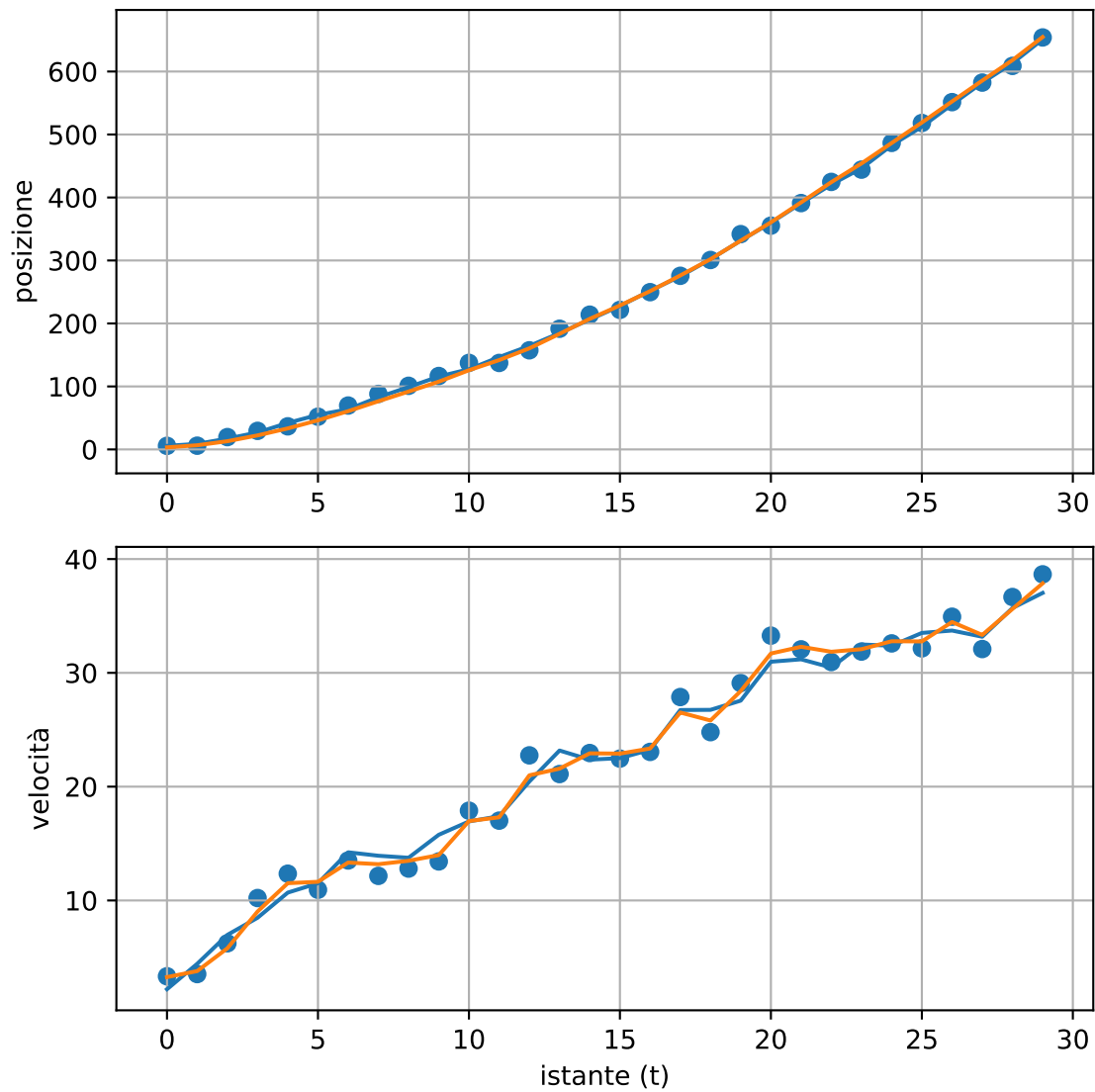
You can also embed plots, for example:

```
random.seed("esperimento 1")

kalman_simulation(
    iterations=30,
    real_state=np.array([0, 2]).reshape(2, 1),
    real_state_cov=np.diag([10, 2]),
    real_sensor_cov=np.diag([40, 2]),
    pnoise_cov=np.diag([0, 2]),
    acceleration=1,
)

## Covarianza al tempo 30
## [[7.49117503 0.5531821 ]
##  [0.5531821  1.2250429 ]]
## Kalman Gain al tempo 30
```

```
## [[0.18727938 0.27659105]  
## [0.01382955 0.61252145]]
```



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.