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// T11simReg2.sce
// STATIC REGRESSION MODEL WITH KNOWN VARIANCE
// Experiments
// - change constant kS of the model
// - change the input signal and check quality of estimation
// -----
exec("ScIntro.sce",-1), mode(0)

// PARAMETERS // 1
nd=100; // length of data // 2
kS=5; // constant (model absolute term) // 3
sS=.1; // noise std // 4
u=signal(nd,1,.1); // input // 5
S=0; ka=0; // initial statistics (zero information) // 6
// 7
// TIME LOOP // 8
for t=1:nd // 9
    // simulation // 10
    y(t)=kS+sS*rand(1,1,'n'); // simulation // 11
    // update // 12
    S=S+y(t); // statistics update // 13
    ka=ka+1; // 14
    // parameters // 15

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    kE=S/ka;                                // estimate (average)           // 16
    tht(t)=kE;                               // 17
end                                           // 18
                                           // 19

// RESULTS OF THE SIMULATION                // 20
set(gcf(),"position",[500 100 1200 400])    // 21
subplot(131),plot(1:nd,u),title('Input')    // 22
subplot(132),plot(1:nd,y),title('Output')  // 23
subplot(133),plot(1:nd,tht),title('Evolution of pt.estimates') // 24
disp('Simulated values of k',kS)           // 25
disp('Final estimate of k',kE)            // 26

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Description of the program

- Rows 3,4 set parameters of the model
- Row 5 generates input signal
- Row 6 are initial statistics (no prior information)
- Rows 9–18 perform the time loop
- 17: simulation
 - 13–14: update of statistics
 - 16: point estimates of parameters