
```
function [ Xk, SigmaX, PiN ] = calcKalmanSmooth(Z, sigmaA, sigmaN, x1,  
v1, F, G, H, P, bias )
```

```
    n=length(Z);
```

```
    Xk = zeros(3, n);  
    Xk(:, 1) = [2; 0; 0];
```

```
    Q=sigmaA * (G*G');  
    Ak=cell(1,200);  
    PiN=cell(1,200);  
    Ppredict=cell(1,200);  
    Pfiltrate=cell(1,200);  
        Pfiltrate(1)={P};  
        Ppredict(1)={P};  
    SigmaX = zeros(3,n);  
    SigmaX(1,1) = sqrt(P(1,1));  
    SigmaX(2,1) = sqrt(P(2,2));  
    SigmaX(3,1) = sqrt(P(3,3));
```

```
    for i=2:n  
        P=F*P*F'+Q;  
        Ppredict(i)={P};  
        K=P*H'/(H*P*H'+ sigmaN^2);  
        Xk(:,i) = F*Xk(:, i-1) + G*bias;  
        Xk(:,i) = Xk(:,i)+K*(Z(i)-H*Xk(:,i));
```

```
        P = (eye(3)-K*H)*P;  
        Pfiltrate(i)={P};
```

```
        SigmaX(1,i) = sqrt(P(1,1));  
        SigmaX(2,i) = sqrt(P(2,2));  
        SigmaX(3,i) = sqrt(P(3,3));
```

```
    end
```

```
    Xks(:,n)=Xk(:,n);  
    PiN{n}=Pfiltrate{n};
```

```
    for i=n-1:-1:1  
        P1=Ppredict{i};  
        P2=Pfiltrate{i};  
        Ak(i)={P2*F'*(inv(P1))};  
  
        PiN(i)={Pfiltrate{(i)}+Ak{(i)}*(PiN{(i+1)})-  
Ppredict{(i)}*(Ak{(i)}')};  
        Xks(:,i)=Xk(:,i)+Ak{(i)}*(Xks(:,i+1)-F*Xk(:,i));
```

```
    end
```

Not enough input arguments.

Error in calcKalmanSmooth (line 3)

```
    n=length(Z);
```
