

```
[X, fs] = audioread('newspapers.wav');

lambda = 0.99995;
Step_size = 10^-5;

L = X(:,1);
R = X(:,2);

L2=mean(X(1:100,1).^2);
R2=mean(X(1:100,2).^2);
LR=mean(X(1:100,1).*X(1:100,2));

k = zeros(length(X),1);

for i=2:length(X)

    L2=(1-lambda)*X(i-1,1)^2+lambda*L2;
    R2=(1-lambda)*X(i-1,2)^2+lambda*R2;
    LR=(1-lambda)*L(i-1)*R(i-1)+lambda*LR;

    dQdk = 2*(2*LR*k(i-1)+R2+L2)*(LR*k(i-1)^2+(R2+L2)*k(i-1)+LR);

    k(i) = k(i-1) - Step_size * sign(dQdk);
end

X_hat = L + k.*R;
Y_hat = k.*L + R;

audiowrite("sepnewspaper1.wav",X_hat/max(abs(X_hat)),fs)
audiowrite("sepnewspaper2.wav",Y_hat/max(abs(Y_hat)),fs)

plot(k)
ylabel("k value")
xlabel("measurement")
title("k value of measurement")
```