```
format long
Udiff=zeros(1,5);
Vdiff=zeros(1,5);
Sdiff=zeros(1,5);
Adiff=zeros(1,5);
for i=[1:5]
    [U,X]=qr(randn(50));
    [V,Y]=qr(randn(50));
    S = diag(sort(rand(50,1),'descend'));
    A=U*S*V';
    [U2,S2,V2]=svd(A);
    Udiff(i)=norm(U-U2);
    Vdiff(i)=norm(V-V2);
    Sdiff(i)=norm(S-S2);
    Adiff(i)=norm(A-U2*S2*V2');
    figure(i)
    hold on
    plot(diag(U2'*U),'b')
    plot(V2'*V,'r')
    legend('diag(U2*U)','V2*V')
end
Udiff
Vdiff
Sdiff
Adiff
```