close all;

clear all;

%%

addpath 'fusion\_metrix'

X=imread( 'mri\_090.jpg');

X1=imread('pet\_090.jpg');

lab1=rgb2lab(X);

lab2=rgb2lab(X1);

%% FDO reconstruction Algorithm1 in our manuscript

if (size(X,3) ~= 1)

A = rgb2gray(X);

end

S1=FDO(A);

if (size(X1,3) ~= 1)

B = rgb2gray(X1);

end

S2=FDO(B);

%% GFF fusion to produce pre-fusion result "IFR" in Fig. 2

I(:,:,1)=S1;

I(:,:,2)=S2;

Prefusion = GFF(I);

lab=rgb2lab(cat(3,Prefusion,Prefusion,Prefusion));

PFused=lab2rgb(cat(3,lab(:,:,1),lab2(:,:,2),lab2(:,:,3)));

figure(1),imshow(PFused)

%% DPGF Algorithm2 in our manuscript

n=50; %% number of interations of DPFG

[Fused metri]=DPGF(X,X1,Prefusion,n); % "Fused" is the final fused result, and "metri" is the evaluation scores

% imwrite(Fused, strcat('PRO\_',num2str(img\_name{num}),'.bmp'));

%% Line diagram of the evaluation metircs

tx=1:1:n;

figure (3),

plot(tx,metri(:,1)/max(metri(:,1)),'-^',tx,metri(:,2)/max(metri(:,2)),'-o',tx,metri(:,3)/max(metri(:,3)),'-\*', tx,metri(:,4)/max(metri(:,4)),'-d',...

tx,metri(:,5)/max(metri(:,5)),'-x',tx,metri(:,6)/max(metri(:,6)),'-rp'),legend ('AVG','MIN','Q^A^B^/^F','VIF','SSIM','PSNR')

axis([-inf inf,-inf,1.05]);

%% Final score of our method

name = {'AVG','MIN','QABF','VIF','SSIM','PSNR'};

T = array2table(metri(n,:),'VariableNames',name)