

Project Progress V

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Full search was implemented in MATLAB with macroblock size 8x8 and search area 16x16 for 10 frames of the video sequence of "Foreman", to get 10 residual frames after proper motion compensation while forming the predicted frames. Hence a set of motion vectors were also generated. The following MATLAB code was implemented:

```
clc
clear all
close all
tstart=cputime;

f_ref(1:300,1:300)=0;
Im=imread('E:\foreman_10frames\f001.pgm');
f_ref(9:288,9:288)= Im(9:288,9:288);
srcFiles = dir('E:\foreman_10frames\*.pgm');

f_p=zeros(300,3000);
X=zeros(35,350);
Y=zeros(35,350);
MSE=zeros(1,9);
for frameNo=1:9
    filename = strcat('E:\foreman_10frames\',srcFiles(frameNo+1).name);
    f_2(1:300,1:300)=0;
    Im2= imread(filename);
    f_2(9:288,9:288)= Im2(9:288,9:288);

    s=1;
    X_motion=zeros(35);
    Y_motion=zeros(35);
    f_pre(1:300,1:300)=0;
    for i=9:8:288
        t=1;
        for j=9:8:288

            img_abs=zeros(8,8);
            img_16=f_ref(i-4:i+7+4,j-4:j+7+4);
            img_8=f_2(i:i+7,j:j+7);

            for p=1:8
                for q=1:8
```

```

            img_abs(p,q)=sum(sum((img_16(p:p+7,q:q+7)- img_8).^2));
        end
    end

    [M,I] = min(img_abs(:));
    [row_cor, col_cor] = ind2sub(size(img_abs),I);

    f_pre(i:i+7,j:j+7)=img_16(row_cor:row_cor+7,col_cor:col_cor+7);

    X_motion(s,t)= row_cor -5;
    Y_motion(s,t)= col_cor -5;
    t=t+1;
end

s=s+1;
end
f_p(1:300, 1+(300*frameNo):300*(frameNo+1))=f_pre;
X(1:35, 1+(35*(frameNo-1)):35*frameNo)=X_motion;
Y(1:35, 1+(35*(frameNo-1)):35*frameNo)=Y_motion;

residu1=abs(f_2-f_pre);
MSE(frameNo)=(sum(sum((residu1).^2)))/90000;
figure,imshow(uint8(residu1));
title('reduced residue after Full Search Operation');
figure,imshowpair(f_2,f_ref,'diff');
title('actual residue or difference between frames');
f_ref=f_2;
end
telapsed=cputime-tstart;
Frame=[1 2 3 4 5 6 7 8 9];
figure,fullSearch=plot(Frame,MSE);
title('Mean Square Error [MSE] Vs Frames Plot');
ylabel('MSE found in Full Search');
xlabel('Frame number');
display('time elapsed in search');
display(telapsed);
display(MSE);

time elapsed in search

telapsed =

    20.5625

MSE =

Columns 1 through 7

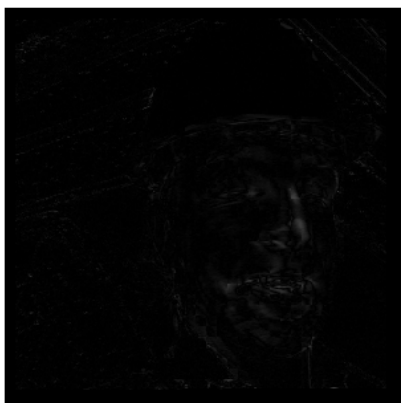
    29.7635    25.3224    24.9184    19.0149    14.1341    17.3673    14.6577

Columns 8 through 9

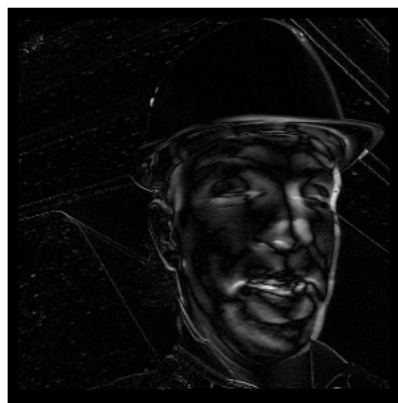
```

18.0949 19.3120

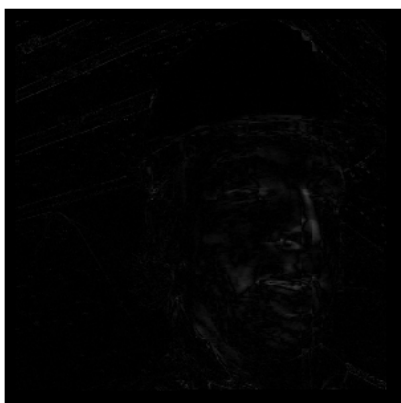
reduced residue after Full Search Operation



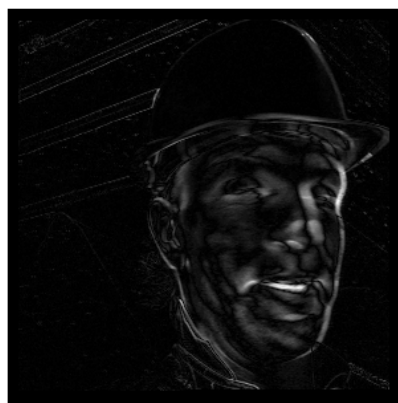
actual residue or difference between frames



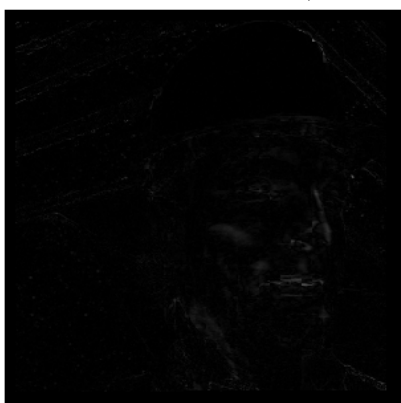
reduced residue after Full Search Operation



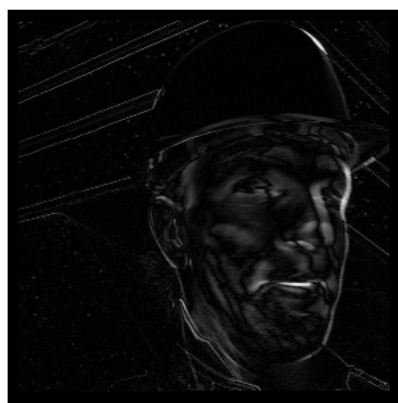
actual residue or difference between frames



reduced residue after Full Search Operation



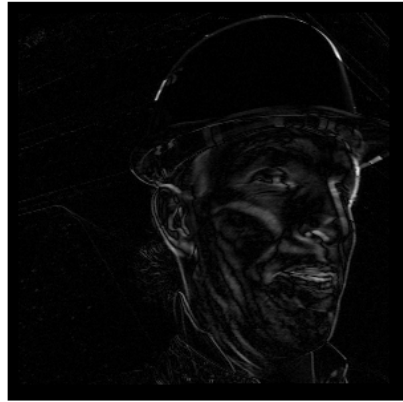
actual residue or difference between frames



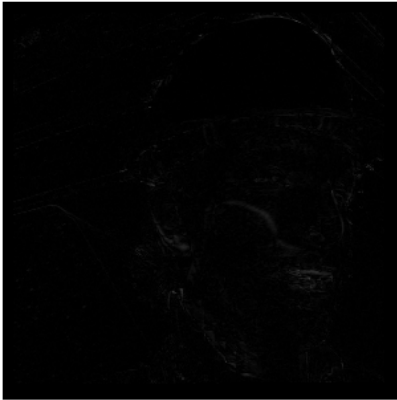
actual residue or difference between frames



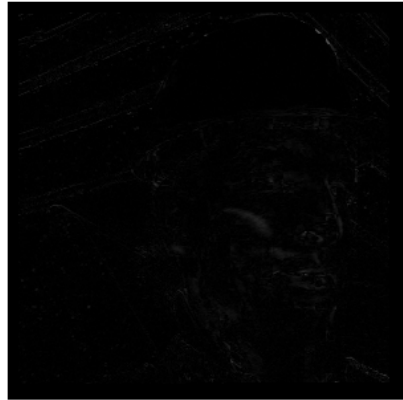
actual residue or difference between frames



reduced residue after Full Search Operation



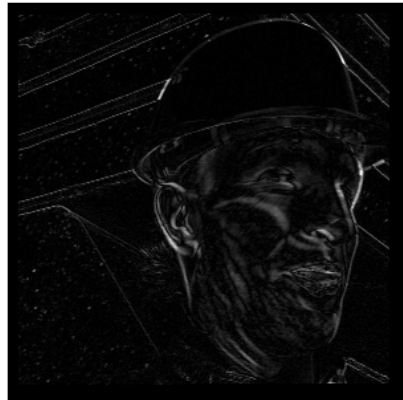
reduced residue after Full Search Operation



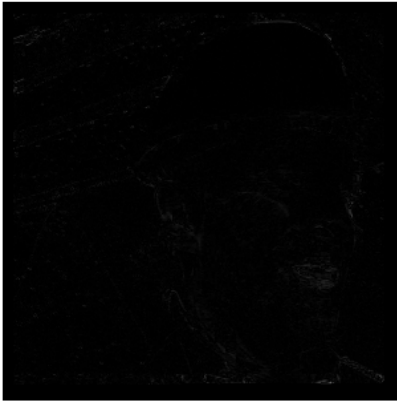
reduced residue after Full Search Operation



actual residue or difference between frames



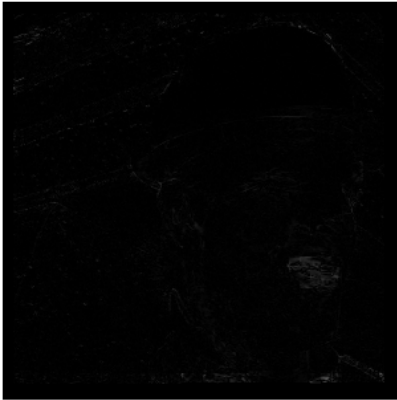
reduced residue after Full Search Operation



actual residue or difference between frames



reduced residue after Full Search Operation



actual residue or difference between frames



reduced residue after Full Search Operation



actual residue or difference between frames

