

ภาคผนวก ข
Source Code Program

```
%gv

imaqmem
imaqmem('FrameMemoryLimit')
imaqmem(3212083200)

% Access an image acquisition device.
vid = videoinput('winvideo');
vid.Timeout = 20;

ftg=50;

% Configure object to capture every fifth frame.
set(vid, 'FrameGrabInterval', 5);

% Configure the number of frames to be logged.
set(vid, 'FramesPerTrigger', ftg);

% Access the device's video source object selected for acquisition.
src = getselectedsource(vid);

% Configure the device to provide 30 frames per second.
%set(src, 'FrameRate', '30');

% Open a live preview window. Focus camera onto a moving pendulum.
%preview(vid);
```

```
% Initiate the acquisition.
```

```
start(vid);
```

```
% Extract frames from memory.
```

```
[frames, tag] = getdata(vid);
```

```
% Remove video input object from memory.
```

```
delete(vid)
```

```
clear vid
```

```
% Display the first frame in the series.
```

```
imshow( frames(:, :, 1) );
```

```
imwrite(frames(:,:,1),'070701.jpg','JPG');
```

```
imwrite(frames(:,:,2),'070702.jpg','JPG');
```

```
imwrite(frames(:,:,3),'070703.jpg','JPG');
```

```
imwrite(frames(:,:,4),'070704.jpg','JPG');
```

```
imwrite(frames(:,:,5),'070705.jpg','JPG');
```

```
imwrite(frames(:,:,6),'070706.jpg','JPG');
```

```
imwrite(frames(:,:,7),'070707.jpg','JPG');
```

```
imwrite(frames(:,:,8),'070708.jpg','JPG');
```

```
imwrite(frames(:,:,9),'070709.jpg','JPG');
```

```
imwrite(frames(:,:,10),'070710.jpg','JPG');
```

```
imwrite(frames(:,:,11),'070711.jpg','JPG');
```

```
imwrite(frames(:,:,12),'070712.jpg','JPG');
```

```
imwrite(frames(:,:,13),'070713.jpg','JPG');
```

```
imwrite(frames(:,:,14),'070714.jpg','JPG');
```

```
imwrite(frames(:,:,15),'070715.jpg','JPG');
```

```
imwrite(frames(:,:,16),'070716.jpg','JPG');
```

```
imwrite(frames(:,:,17),'070717.jpg','JPG');
imwrite(frames(:,:,18),'070718.jpg','JPG');
imwrite(frames(:,:,19),'070719.jpg','JPG');
imwrite(frames(:,:,20),'070720.jpg','JPG');
imwrite(frames(:,:,21),'070721.jpg','JPG');
imwrite(frames(:,:,22),'070722.jpg','JPG');
imwrite(frames(:,:,23),'070723.jpg','JPG');
imwrite(frames(:,:,24),'070724.jpg','JPG');
imwrite(frames(:,:,25),'070725.jpg','JPG');
imwrite(frames(:,:,26),'070726.jpg','JPG');
imwrite(frames(:,:,27),'070727.jpg','JPG');
imwrite(frames(:,:,28),'070728.jpg','JPG');
imwrite(frames(:,:,29),'070729.jpg','JPG');
imwrite(frames(:,:,30),'070730.jpg','JPG');
imwrite(frames(:,:,31),'070731.jpg','JPG');
imwrite(frames(:,:,32),'070732.jpg','JPG');
imwrite(frames(:,:,33),'070733.jpg','JPG');
imwrite(frames(:,:,34),'070734.jpg','JPG');
imwrite(frames(:,:,35),'070735.jpg','JPG');
imwrite(frames(:,:,36),'070736.jpg','JPG');
imwrite(frames(:,:,37),'070737.jpg','JPG');
imwrite(frames(:,:,38),'070738.jpg','JPG');
imwrite(frames(:,:,39),'070739.jpg','JPG');
imwrite(frames(:,:,40),'070740.jpg','JPG');
imwrite(frames(:,:,41),'070741.jpg','JPG');
imwrite(frames(:,:,42),'070742.jpg','JPG');
imwrite(frames(:,:,43),'070743.jpg','JPG');
imwrite(frames(:,:,44),'070744.jpg','JPG');
```

```

imwrite(frames(:,:,45),'070745.jpg','JPG');
imwrite(frames(:,:,46),'070746.jpg','JPG');
imwrite(frames(:,:,47),'070747.jpg','JPG');
imwrite(frames(:,:,48),'070748.jpg','JPG');
imwrite(frames(:,:,49),'070749.jpg','JPG');
imwrite(frames(:,:,50),'070750.jpg','JPG');

```

```

imaqmontage(frames);

```

```

%xten1

```

```

%640*480 = 50cm

```

```

ftrgv=50

```

```

% CROPPING

```

```

for i=1:ftrgv

```

```

framesvs(:,:,i) = imcrop(frames(:,:,i),[340 0 230 576]);

```

```

end

```

```

%framesv=frames;

```

```

framesvv=framesvs;

```

```

%framesvvr=framesvs(:,:,1,:);

```

```

%framesvvb=framesvs(:,:,3,:);

```

```

%framesvv=framesvs(:,:,1:50);

```

```

[irv,icv,ibv,ix] = size(framesvs(:, :, :))

```

```

% MEDIAN
for i=1:frgv
    framesv(:, :, 1,i) = medfilt2(framesvs(:, :, 1,i),[5 5]);
    framesv(:, :, 2,i) = medfilt2(framesvs(:, :, 2,i),[5 5]);
    framesv(:, :, 3,i) = medfilt2(framesvs(:, :, 3,i),[5 5]);
i
end

%%%%%%%%%% get image I3 %%%%%%%%%%

%%%%%%%%%% this is center blue point which cof =100:225 %%%%%%%%%%

%%%%%%%%%% check red object using Left Top scan %%%%%%%%%%

for z=1:frgv
    for i=1:irv
        for j=1:icv
            if (framesv(i,j,1,z) > 220) & (framesv(i,j,2,z) <60) & (framesv(i,j,3,z) <60),
                framesvv(i,j,1,z)= 255;
            else framesvv(i,j,1,z)= 0;
            end
        end
    end

end

z
end

%%%%%%%%%% check blue object Left Top scan %%%%%%%%%%

for z=1:frgv
    for i=1:irv
        for j=1:icv
            if (framesv(i,j,1,z) < 60) & (framesv(i,j,2,z) < 225) & (framesv(i,j,3,z) >230) ,

```

```

        framesvv(i,j,3,z)= 255;
    else framesvv(i,j,3,z)= 0;
end
end
end
z
end

%kv

tagen=[tag,tag,tag,tag]
tagen(:,2)=0;
tagen(:,3)=0;
tagen(:,4)=0;
tagen(:,5)=0;
%get coordate of red on each frame
for z=1:ftgv
    for i=1:irv
        for j=1:icv
            if framesvv(i,j,1,z)==255,
                taken(z,2)= i;

            end
        end
    end

end
end
end
end

```

```
for z=1:frgv
    for i=1:irv
        for j=1:icv
            if framesvv(i,j,3,z)==255,
                tagen(z,3)= i;

            end

        end

    end

end

tagen(:,4)=tagen(:,3)-tagen(:,2);
tagen(:,5)=(tagen(:,4))*(415/576)
```