

# CONTENT BASED VIDEO SEGMENTATION

## *Team Members*

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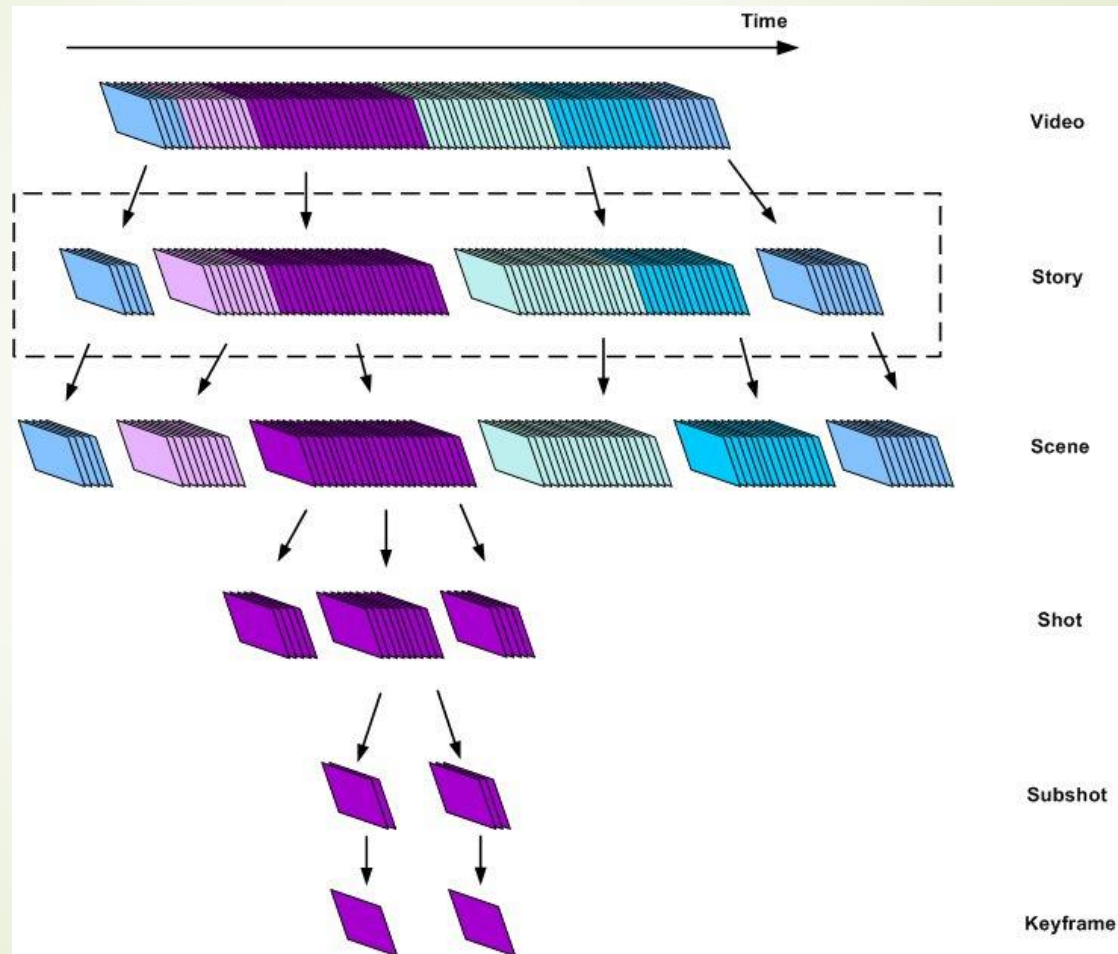
Erdoğan Doğdu

# CONTENT BASED VIDEO SEGMENTATION

- Segment video into meaningful shots
  - compatible with video formats such as .avi,.mov etc.
  - based on visual feature changes
  - local motions don't effect frame difference.
- Main features
  - display shots
  - view the shifts in frames while segmenting automatically and manually.



# VIDEO AND ITS LAYERS



# PREVIOUS WORK ON TEMPORAL VIDEO SEGMENTATION

Group						
Information Used	[1]	[2]	[3]	[4]	[5]	[6]
DCT coefficients	✓			✓		
DC terms		✓	✓			
MB coding mode			✓	✓	✓	✓
MVs			✓	✓	✓	
Bit-rate						✓

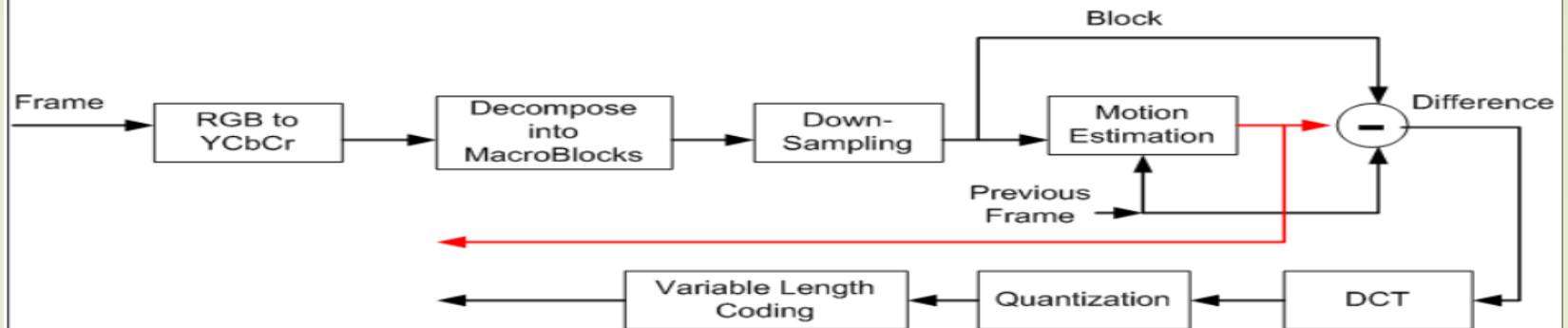
# WORKPLAN AND SUCCESS CRITERION

Start Date: 20/02/2018		20.02.2018-27.02.2018	27.02.2018-06.03.2018	06.03.2018-13.03.2018	13.03.2018-20.03.2018	20.03.2018-27.03.2018	27.03.2018-03.04.2018	03.04.2018-10.04.2018	10.04.2018-17.04.2018	17.04.2018-24.04.2018	24.04.2018-01.05.2018	01.05.2018-08.05.2018	08.05.2018-15.05.2018
		WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12
<b>Document Revision</b>	week(1-3)												
Work Plan	Berk												
SRS and SDD Finalization	Engin												
Preparing Test Plan	Ece												
<b>Video Segmentation</b>	week(4-10)												
MPEG2 Analysis	Berk-Engin												
Implementation	Berk-Ece												
MPEG2 Implementation	Ece-Engin												
Threshold	Berk												
GUI Design	Berk												
Testing	Ece												
<b>User Interface</b>	week(11-13)												
Project Poster	Engin												
Project Report	Ece												
Youtube Demo	Berk												
Preparing Presentation	Team												

Success criterion	How to Measure
Segment Video	Compare with manual segment.
Content Protection	Compare with manual segment.

# MATERIALS AND METHODS

## Video Coding Block Diagram



```
function [difPframeMV,difPframeCoeff,difPframeThres] = encodemovie(vid)
```

```

framepatern = 'IPPPP';
pf = [];
t=1;
while hasFrame(vid)
    mov = readFrame(vid);
    k=mod(t,5);
    if(k==0)
        k=5;
    end
    for i = 1:size(mov,4)
        fr = double(mov(:,:,i));
        fr = rgb2ycc(fr);
        ftype = framepatern(k);
        [mpeg(t),pf] = encodeframe(fr,ftype,pf);
        fprintf('%d frame is encoded\n',t);
        totaldc(t)=calculatedtotalcoeff(mpeg(t));
        totalmv(t)=calculatedmv(mpeg(t));
        x1=totalmv(t)*w1;
        x2=totaldc(t)*w2;
        threshold(t)=x1+x2;
    end
end

```

```
function [encmpeg,df] = encodeframe(frame,ftype,pf)
```

```

[M,N,i] = size(frame);
mbsize = [M, N] / 16;
encmpeg = struct('type',[],'mvx',[],'mvy',[],'scale',[],'coef',[]);
encmpeg(mbsize(1),mbsize(2)).type = [];

% Loop over macroblocks
pfy = pf(:, :, i);
df = zeros(size(frame));
for m = 1:mbsize(1)
    for n = 1:mbsize(2)

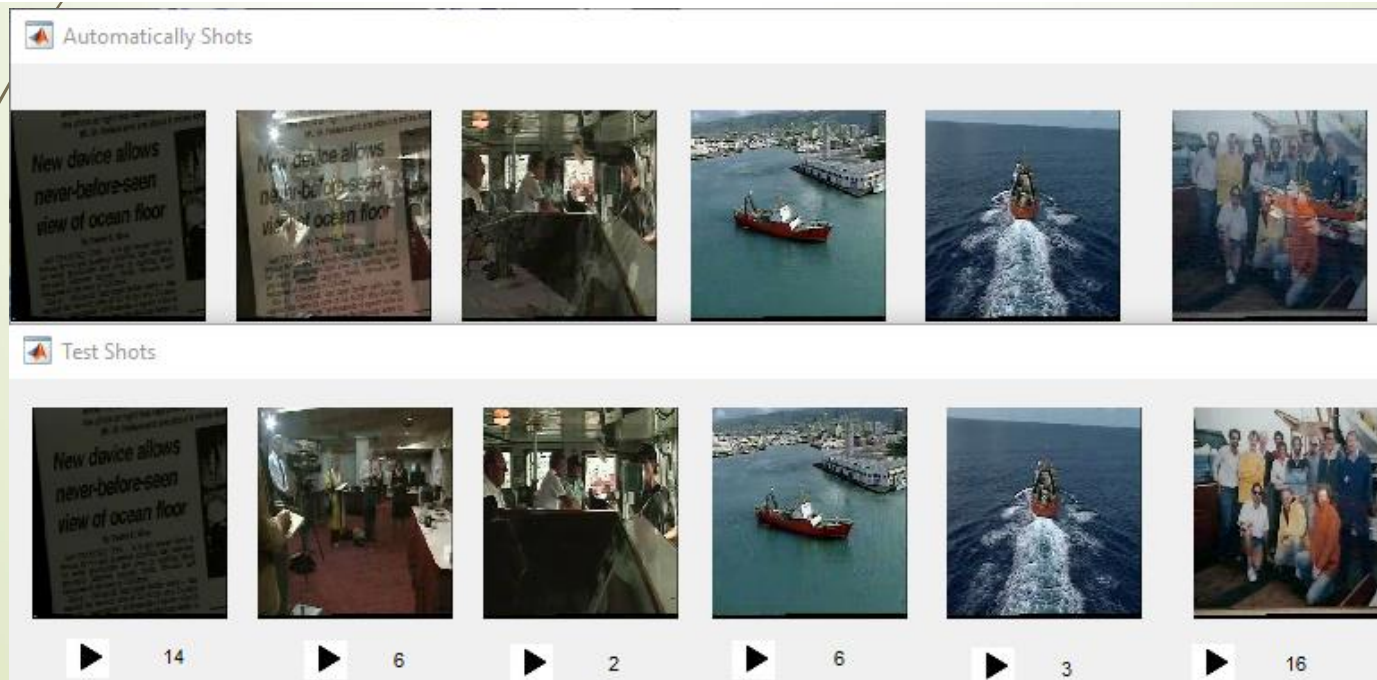
        % Encode one macroblock
        x = 16*(m-1)+1 : 16*(m-1)+16;
        y = 16*(n-1)+1 : 16*(n-1)+16;
        [encmpeg(m,n),df(x,y,:)] = encmacroblock(frame(x,y,:),ftype,pf,pfy,x,y);

    end % macroblock loop
end % macroblock loop
end
function [encmpeg,dmb] = encmacroblock(mb,ftype,pf,pfy,x,y)

```

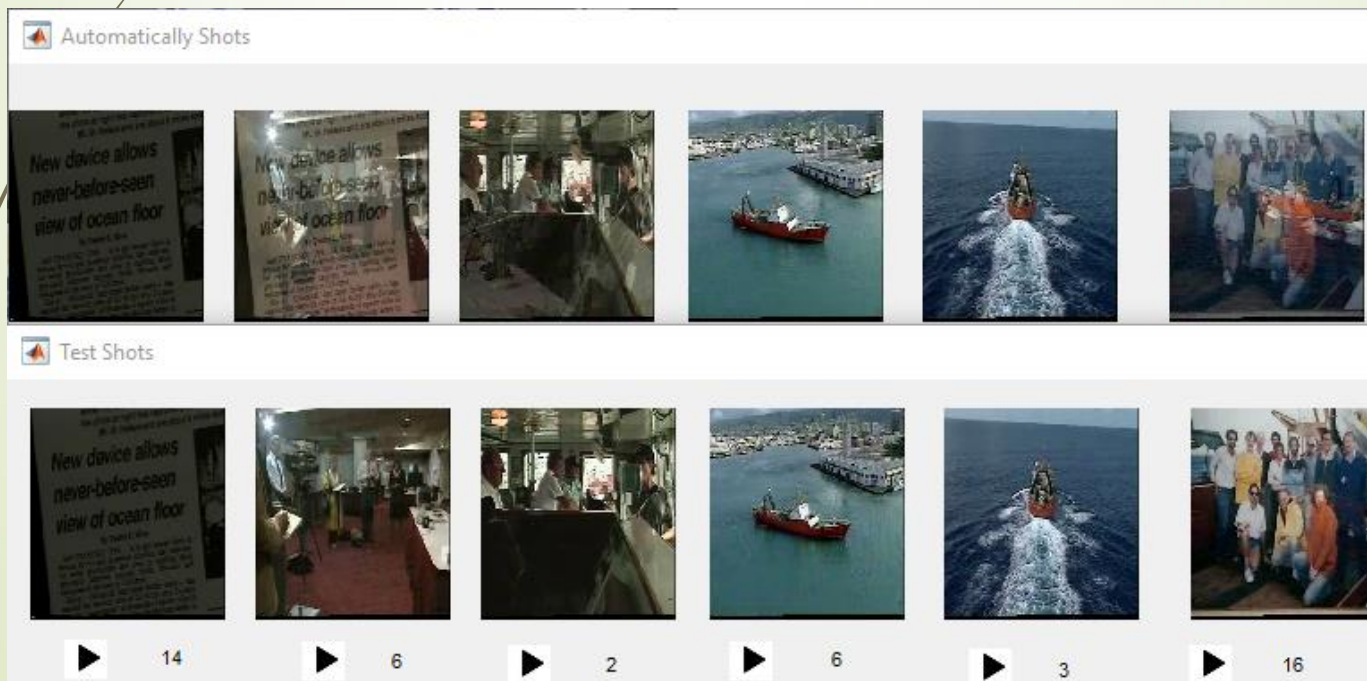
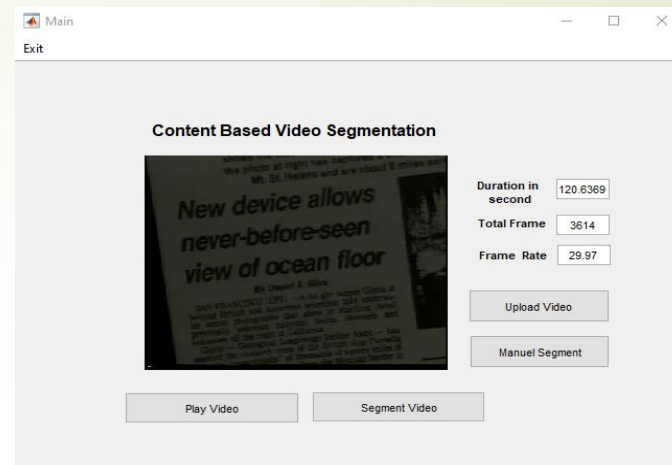
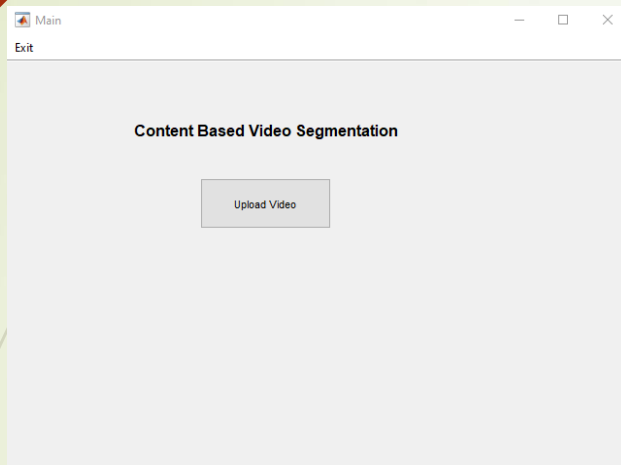
# POTENTIAL RISK AND EXPECTED OUTPUTS/ OBTAINED RESULTS

Risks	Precautions	Potential Impact	Plan B	Implication Level
Shifts in frames while automatically segmenting	Manually segment just in case to compare.	Inaccurate number of frames in shots.	Start 10 frames ahead.	Medium
Taking long time to segment videos	Uploading videos which are less than 5 minutes.	For user to wait long to see the segments.	Convert MATLAB code into C code using MATLAB Coder.	Low





# APPLICATION







# ACKNOWLEDGEMENTS

We appreciate the guidance of

- Prof. Dr. Erdoğan DOĞDU
- Assist. Prof. Dr. Roya CHOUPANI



**THANK  
YOU**



Any  
questions

