# CONTENT BASED VIDEO SEGMENTATION

*Team Members*

Berk Can Özütemiz

Ece Nalçacı

Veli Engin Öztürk

*Advisors*

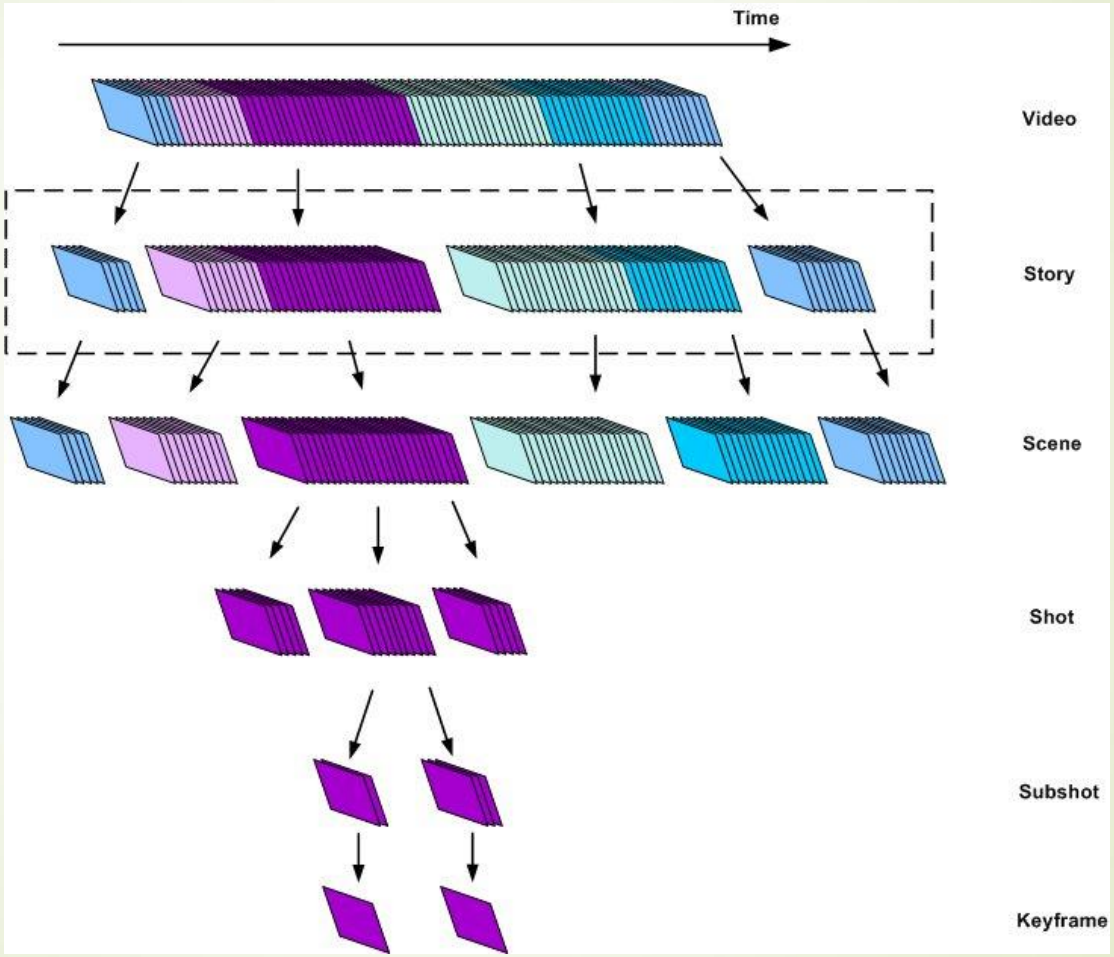
Roya Choupani

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.

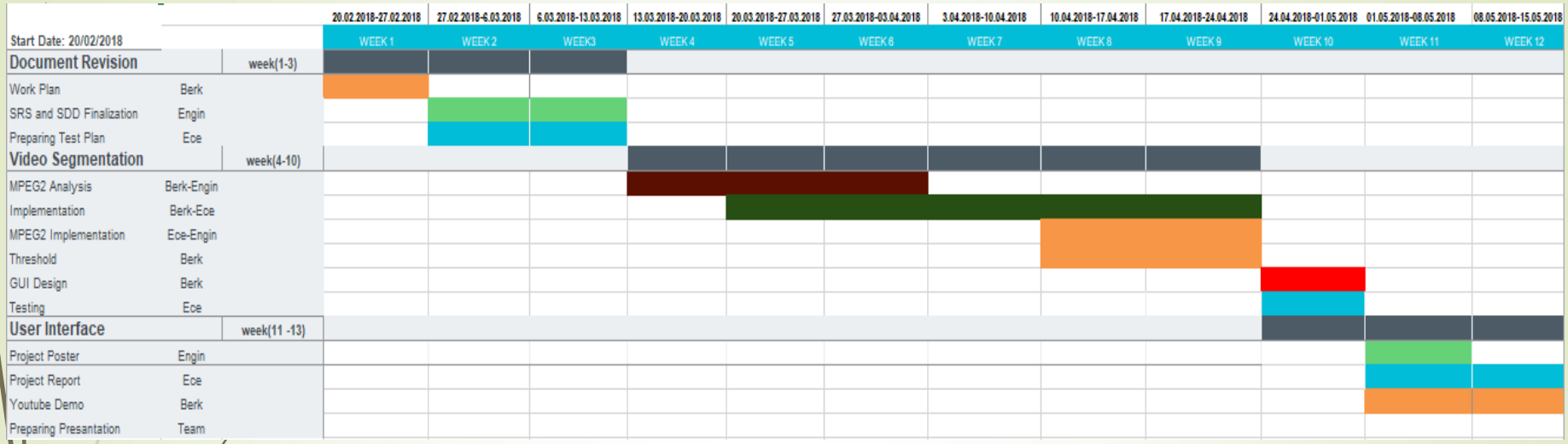
# VIDEO AND ITS LAYERS



# PREVIOUS WORK ON TEMPORAL VIDEO SEGMENTATION

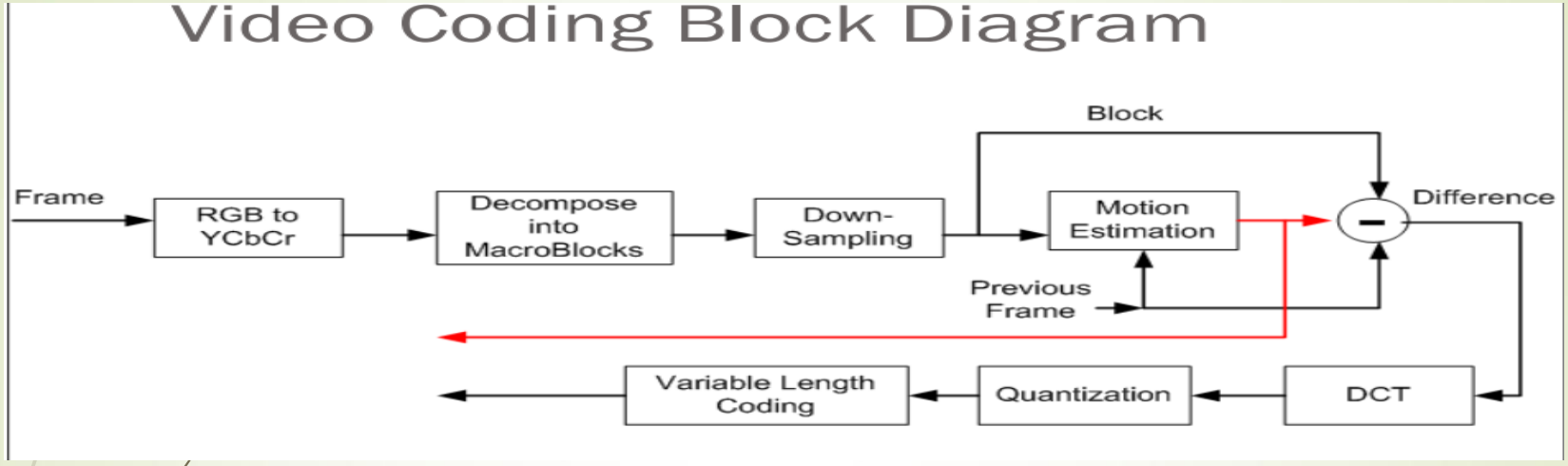
| | Group | | | | | |
|---|---|---|---|---|---|---|
| Information Used | [1] | [2] | [3] | [4] | [5] | [6] |
| DCT coefficients | ✓ | | | ✓ | | |
| DC terms | | ✓ | ✓ | | | |
| MB coding mode | | | ✓ | ✓ | ✓ | ✓ |
| MVs | | | ✓ | ✓ | ✓ | |
| Bit-rate | | | | | | ✓ |

# WORKPLAN AND SUCCESS CRITERION




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

# MATERIALS AND METHODS

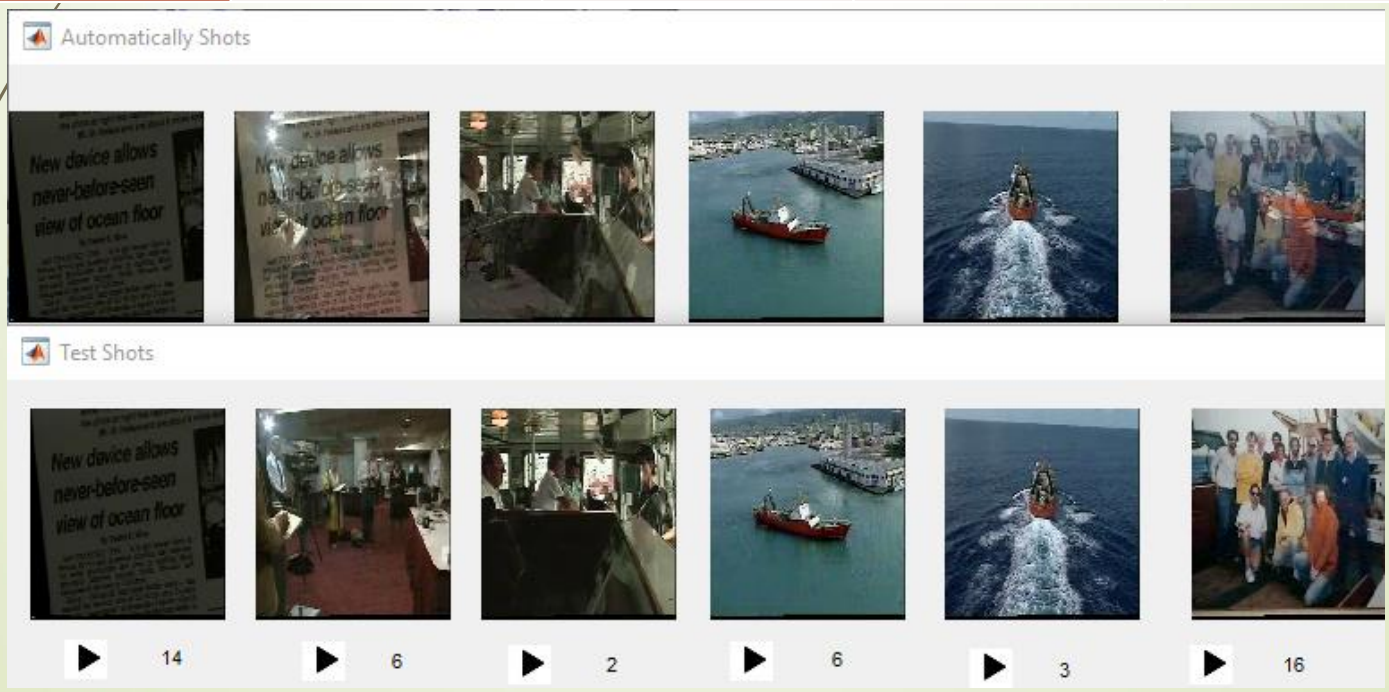



```
function [difPframeMV,difPframeCoeff,difthres] = encodemovie(vid)

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)=calculatetotalcoeff(mpeg{t});
    totalmv(t)=calculatemv(mpeg{t});
    x1=totalmv(t)*w1;
    x2=totaldc(t)*w2;
    threshold(t)=x1+x2;

end
```

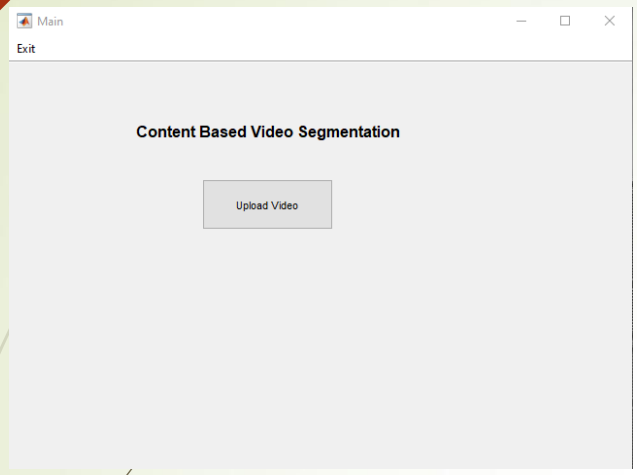
```
function [encmpeg,df] = encodeframe(frame,ftype,pf)

[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(:,:,1);
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)
```

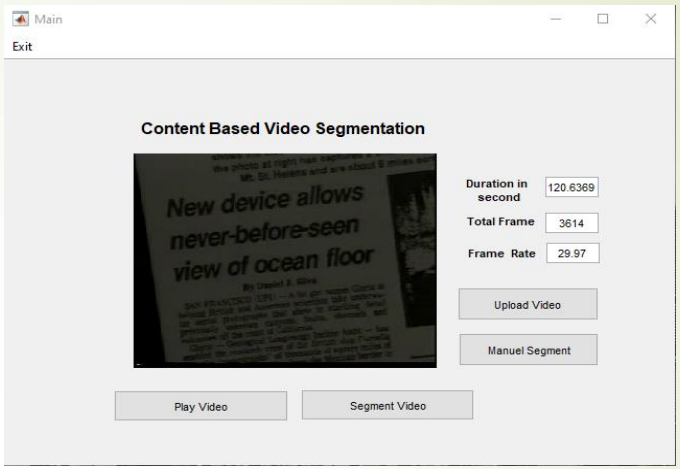
# POTENTIAL RISK AND EXPECTED OUTPUTS/ OBTAINED RESULTS

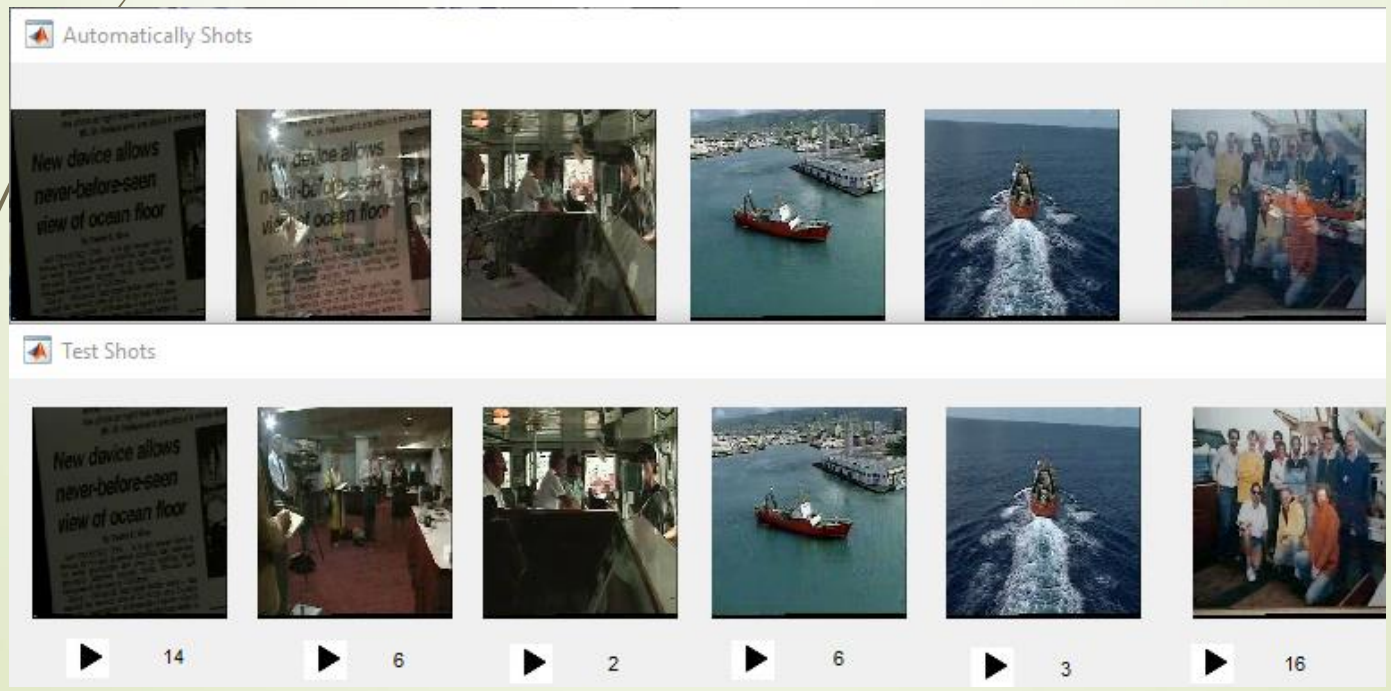
| Risks | Precautions | Potential Impact | Plan B | Implication Level |
|---|---|---|---|---|
| **Shifts in frames while automatically segmenting** | Manuelly segment just in case to compare. | Inaccurate number of frames in shots. | Start 10 frames ahead. | Medium |
| **Taking long time to segment videos** | 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



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Any questions ?