

todos

index of cutfiles and whether it's complete or not get a decent definition of a program. commercials may exist within the same program. for e.g. news -> commercial -> short weather news -> commercial should this count? (e.g. 2006-06-13_0000_US_00000433_V5_MB13_VHS14_H1_MS.txt3 ~3h15m) * file index (cutpoints, caption available) *shortage of labelled samples: build a decent working classifier (that achieves 90+%) and let it generate samples. The supervising samples are considered labelled but extremely noisy so a noise-robust DNN model can learn from it.* noise (consistent, e.g 2006-06-13_v11)

ideas

- shot boundaries may not be useful (just like phonetics was not useful in speech recognition)=
- smallest decision unit: segment based on shot boundaries or histogram difference between two frames, entropy, video saliency
- medium decision unit: segment based on stories and learn to combine them to a program... anchor shot...
- largest decision: unit program

input data

- video
 - visual:
 - audio:
- text
 - caption: srt, txt3, tx4?

identified patterns (feature candidates)

caption

There seem to be a few keywords that appear recurringly in the caption files and they seem to be correlated with program boundaries.

Such keywords (case insensitive) are: caption, commercial, story, SEG. *caption: caption by, captioning by...*

commerical: type=commercial. marks the start of commercial *story: marks the start of story segment* SEG: marks a story transition.

However, this applies only to videos with the captions. Moreover, some caption files are incomplete (like in 1972-01-07) or don't have the keywords where they should be (=a new story starts and there's no SEG type=story.) This skippy behavior applies to all the keywords. Keywords alone are incomplete.

VCR

This is a hacky feature that may be useful for the given dataset, but won't generalize over other news program datasets. The indices of VCRs used for recording are specified in the filenames. The indices may give hint for channel names and recurring structure of programs.

For example, V2 seems to record NBC channels on a regular recording schedule. V2_2006_03_01 may have a similar structure as the next day V2_2006_03_02 (for daily programs) and a week later V2_2006_03_08 (for weekly programs)

v0: v1: WCBS-TV (cbs) v2: NBC v3: ABC v4: v5: v6: v7: v8: v9: v10:

The VCR index to TV channel mapping seems valid throughout the years.

recurring music & opening/closing/transition

The recurring opening/closing music can be identified using audiofingerprinting. The model won't likely miss the one it has heard before. Since this assumes we already have a database of audio fingerprints, this route is infeasible. We will have to extract the short clips of frames that contain a piece of opening/closing music and this is a manual process.

There are repeating lines used, such as greetings. We can easily build up a list of such lines/keywords. We can get a sense of what lines/keywords are commonly used through googling.

The keywords are: (to be added)

Commercial

The

recurring structure

weather -> coming up

there are exceptions: no caption keywords at all 2006-06-13_0000_US_00000141_V11_MB12_VHS13_H2_JK.t

opening/closing comments

commercial

music

- vcr
- recording types
- cc-keyword (instances of caption)

Use scripts like cc-keyword-spacing to determine the temporal window in which the show boundary is located Look for stock phrases that indicate the start and ending of shows to narrow down the boundary, using only text Find signature opening images or tune – for some possible code, see Vasanth Kalingeri’s commercial detection and Mattia Cerrato’s audio fingerprinting. Use the patterns of recordings on a particular VCR along with a recording schedule where it can be reconstructed – Prof Groeling has done quite a bit of work on this and will be able to guide you

list of methods

related work

need to filter out by priority need to categorize

- <https://books.google.co.kr/books?id=nCnSy5XXdygC&pg=PA361&lpg=PA361&dq=boundary+segmentation>
- <http://www.inesc-id.pt/pt/indicadores/Ficheiros/1146.pdf>
- https://books.google.co.kr/books?id=50hnLI_Jz3cC&pg=PA4&lpg=PA4&dq=boundary+segmentation
- <http://www.cs.cmu.edu/~mehr/bod/SSeg07.pdf>
- http://www1.cs.columbia.edu/~smaskey/candidacy/cand_papers/merlino_navigation_story_seg.pdf
- <https://pdfs.semanticscholar.org/5c21/6db7892fa3f515d816f84893bfab1137f0b2.pdf>
- <http://cs229.stanford.edu/proj2012/DaneshiYu-BroadcastNews%20StoryBoundaryDetectionUsingVisual,Audio>
- <https://www.hindawi.com/journals/ijdmb/2012/732514/>
- http://medialab.sjtu.edu.cn/publications/2015/2015_BMSB_Wenjing.pdf
- <https://github.com/MaxReimann/Shot-Boundary-Detection/blob/master/paper/SBD-Approach-Paper.pdf>
- <https://sites.google.com/site/distributedlittleredhen/summer-of-code/rsoc15report#Vasanth>
- <https://sites.google.com/site/distributedlittleredhen/summer-of-code/rsoc15report#Mattia>
- <https://arxiv.org/pdf/1411.4389.pdf>
- <https://github.com/yosinski/deep-visualization-toolbox>
- <https://www.slideshare.net/RJlOnline/newsscape-preserving-tv-news>
- http://www.mirlab.org/conference_papers/International_Conference/ICASSP%202009/pdfs/0001957.pdf
- http://mmlab.ie.cuhk.edu.hk/archive/2002/CSVT02_Video.pdf
- http://www.quaero.org/media/files/bibliographie/bredin_segmentation_of_tv_icassp2012.pdf
- <http://www.cstr.ed.ac.uk/downloads/publications/2000/asr2000.pdf>
- http://www.bcs.org/upload/pdf/ewic_im99_paper3.pdf
- <https://www.hindawi.com/journals/ijdmb/2012/732514/>
- <https://pdfs.semanticscholar.org/8516/3a2b8998920cb1655ec81550092fafbf3888.pdf>
- <http://www.ee.columbia.edu/~lyndon/pubs/adventtr2005-seg.pdf>
- <http://dl.acm.org/citation.cfm?id=2106118>
- <http://www.cai.sk/ojs/index.php/cai/article/viewFile/185/156>
- <http://class.inrialpes.fr/pub/poullisse-ihci09.pdf>
- <http://mklab.itl.gr/project/video-shot-segm>

- <http://johmathe.name/shotdetect.html>
- <https://github.com/yahoo/hecate> <https://github.com/andrefaraujo/videosearch>
<https://github.com/Breakthrough/PySceneDetect> <https://github.com/yuhonglin/shotdetect>
https://github.com/gberta/HFL_code *<https://github.com/MaxReimann/Shot-Boundary-Detection>
- <https://arxiv.org/abs/1705.08214> <https://arxiv.org/pdf/1610.00211.pdf>
<https://link.springer.com/article/10.1007/s12652-017-0501-9>
<https://arxiv.org/pdf/1601.07754.pdf> http://www.cv-foundation.org/openaccess/content_cvpr_2015/pape
http://imagelab.ing.unimore.it/imagelab/publicazioni/2015ACMM_Scenes.pdf
<https://arxiv.org/pdf/1511.02674.pdf> *http://videoanalysis.org/Prof._Dr._Rainer_Lienhart/Publications