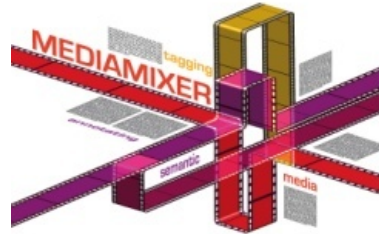


# MediaMixer

InnovationKT, London, 4th April 2014



## Implementation of Media Fragment Retrieval for TV Archives & Lessons Learned

*Rolf Fricke*  
*rolf.fricke@condat.de*



<http://www.mediamixer.eu/>

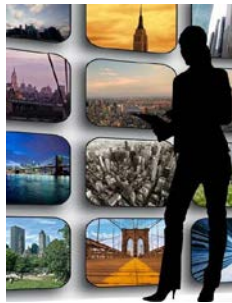




**Condat AG**  
**Rolf Fricke**  
**Alt-Moabit 91 d**  
**10559 Berlin**

[www.condat.de](http://www.condat.de)

## Business Sectors



**TV / Media**



**Web Portals**

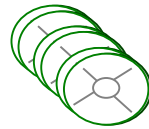


**Mobility**

re-use of  
Media fragments  
from video footage



by Jürg Vollmer / Maiakinfo



- In-house
- End-Users
- Re-selling

## Shot Segmentation

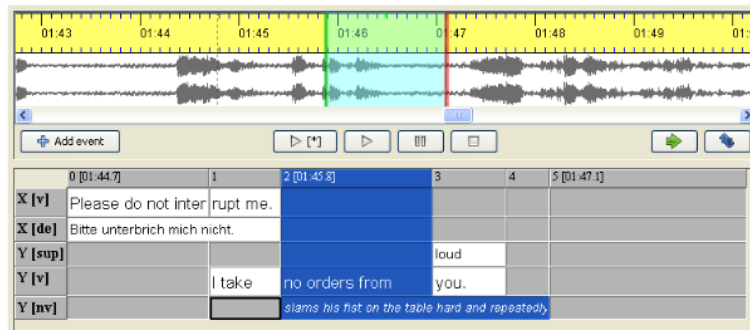
Visual Object Analysis



Text Recognition (OCR)

Face Recognition

Subtitle Extraction



ASR (Automatic Speech Recognition)

Speaker Identification

## Material Type

## Properties

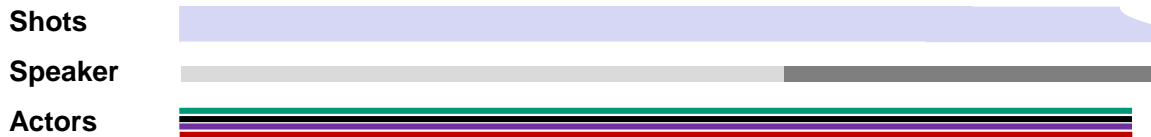
## Analysis

### News, Documentary: Anchorman introduces news issues



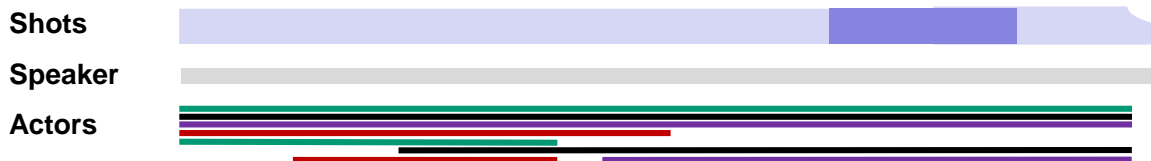
- high voice quality
- overlapping of anchorman intro / news item
- partly known actors
- subtitles, ASR
- OCR
- graphical analysis
- face recognition

### Parliament Session: long contributions from few speakers



- medium voice quality
- contributions from 1 to 30 min
- few, known actors
- text information
- subtitles, ASR
- face recognition
- speaker identification
- OCR

### Sports: continuous comment over long shots



- low voice quality
- core group of known actors
- text information
- subtitles, ASR
- OCR
- graphical analysis
- text recognition

### Video Lectures ....



CC by Wisconsin's Technical Collegues

Parent  
Video Title:

*Canada,  
Wind Energy Technology,  
2012, t=25-36*

Visual  
Analysis:

- *person, yellow hat, green coat*
- *wind turbine*

Keywords:

- *upper-level technicians*
- *wind turbine*
- *manufacturers*
- *CO2*

...  
*wind turbine: wind engine,  
wind wheel, wind energy*



final **Semantic Fingerprint**



CC by Keith Sutterfield

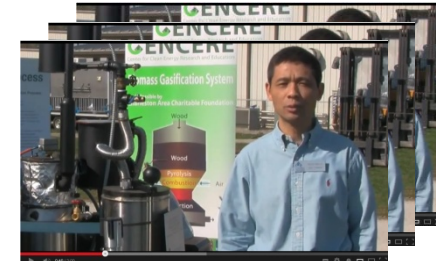
*Wisconsin,  
Renewable Energy Center,  
2011, t=213-225*

- *solar panel*
- *house*

- *solar panels*
- *energy*
- *sunshine duration*

...

*solar panel: solar collector,  
solar concentrator ...*



CC by Keith Sutterfield

*Illinois,  
Bio fuels, 2011  
t=40-54*

- *person, blue coat*

- *research institutes*
- *bio fuels*
- *climate catastrophe*

...

*climate: thermal environment,  
climate change*

Legend

Augmented Information

Enriched Information



**Live Demo Video:**

[http://www.youtube.com/watch?v=6\\_hQbZNJYf4](http://www.youtube.com/watch?v=6_hQbZNJYf4)



Firefox | 127.0.0.1:53106/csmClient/csmClient | W - Wikipedia (Eng)

Newsroom - Smart Media Fragment Recommendation - Tomcat@localhost:8180

File Articles Help

Articles Programs Ontology... Channels

Article selection

Please enter an article title

Renewa

- Renewable Energy in the Caribbean
- Renewable energy popular in Germany
- Renewable energy sector aims to capital

Article

http://mediacenter.dw-world.de/popups/popup\_single\_mediaplayer /0 6607825 tune video contentId 6607825 struct 10111 00 html?mvtitle=Renewable%20energ...%20popular%20in%20G

### Renewable energy popular in Germany


Germany currently generating 20 percent of its electric power from renewable sources, putting it on course to cover 35 percent of its energy needs with renewables by 2020. Survey shows high German readiness to pay for green technologies.

Creation: 30.08.2011 20:39 Publication: 30.08.2011 18:36 Category: Priority:  
 Modification: 30.08.2011 20:39 Depublication: Source:

Tags

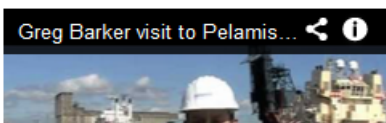
Tagname	Weight
Germany	3.5
Category:Germany	3.5
Energy	2.0
Category:Energy	2.0
Environment	1.5
Category:Environmen	1.5
Category:Power	1.3
Course	1.3
Technology	1.3
Renewables	1.3
Survey	1.3

Similar Media Fragments



Get it done

- Fragment**  
 URL: <http://www.youtube.com/watch?v=j0k6MkImgwc#t=81,89>  
 Time: 1m21s - 1m29s (8s of 5m12s)  
 Ranking: 26%  
 Caption: (00:01:21,242 --> 00:01:29,314)  
 The International Energy Agency tells us we have five years until the window to avoid irreversible climate change closes.
- Parent Video**  
 Titel: Get it done  
 URL: <http://www.youtube.com/watch?v=j0k6MkImgwc>  
 Description: Anjali Appadurai, a student at the College of the Atlantic in Maine, addressed the UN climate conference on behalf of youth delegates. ...
- Fragment**  
 URL: <http://www.youtube.com/watch?v=D4EPezilOtY#t=22,47>  
 Time: 22s - 47s (25s of 1m9s)  
 Ranking: 25%



Greg Barker visit to Pelamis...



Similar Media Fragments



- Fragment**  
 URL: <http://www.youtube.com/watch?v=j0k6MkImgwc#t=81,89>  
 Time: 1m21s - 1m29s (8s of 5m12s)  
 Ranking: 26%  
 Caption: (00:01:21,242 --> 00:01:29,314)  
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 Titel: Get it done  
 URL: <http://www.youtube.com/watch?v=j0k6MkImgwc>  
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- Fragment**  
 URL: <http://www.youtube.com/watch?v=D4EPezilOtY#t=22,47>  
 Time: 22s - 47s (25s of 1m9s)  
 Ranking: 25%  
 Caption: (00:00:22,800 --> 00:00:47,160)  
 ..., that will not only make a major contribution to reducing our **carbon emissions** and increasing our domestic energy security but are actually at the forefront of building a new sector in the global **energy market**.
- Parent Video**  
 Titel: Greg Barker visit to Pelamis wave machine 28 June 11  
 URL: <http://www.youtube.com/watch?v=D4EPezilOtY>  
 Description: On 28 June 2011, Greg Barker visited Scotland and Pelamis Wave Power at Leith Docks in advance of announcing a £20 million investment fund in to Marine power devices as part of the UK effort to reduce carbon emissions and fight climate change.



- Fragment**  
 URL: <http://www.youtube.com/watch?v=4-V4qLWnuuM#t=7,28>  
 Time: 7s - 28s (21s of 4m17s)  
 Ranking: 18%  
 Caption: (00:00:07,080 --> 00:00:28,210)  
 Basically what **greenhouse effect** is, is the sun, which emits mostly long radiation and shortwave radiation, all this radiation comes in in the morning or during daytime without any problem.
- Parent Video**  
 Titel: The Greenhouse effect  
 URL: <http://www.youtube.com/watch?v=4-V4qLWnuuM>

# Lessons Learned

- **Analysis & splitting of videos according material type (news, parliament sessions, sports ... )**
- **good results based on subtitles / high speech quality (news, documentary ... )**
- **lower efforts for using subtitles / ASR, higher for visual analysis (object detection, OCR, face recognition ...)**
- **Retrieval algorithms should be tuned according materials, domain, user profile**



**Thank you  
for your Attention !**