



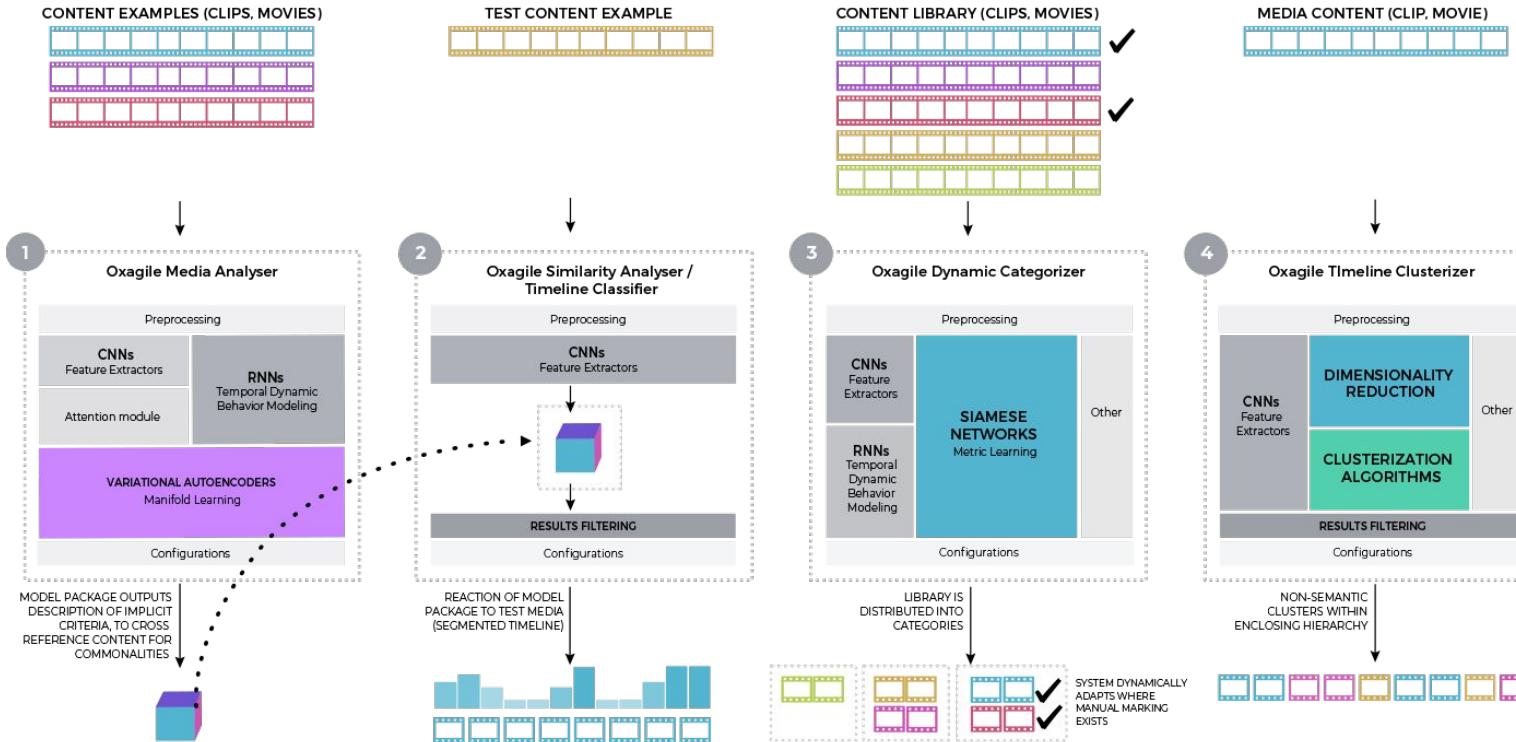
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NEXT-GEN OTT SOLUTIONS PARTNER

Decoding Content DNA

Leverage non-supervised
content classification to
supercharge video processing

CV Framework Architecture



Example 1: Detecting content of a particular type

We created 90-minutes of footage ,consisting of 12 different content pieces (series, shows, movies etc). The task for the system was to identify the 4 particular shows within this piece of content: "Pioneer Woman", "Game of Thrones", "TOP Gear", "Ultimate Survival".

Method: Ingested 2-4 minutes of footage from the corresponding shows to the AI engine

Result: All 4 shows successfully identified in the timeline

Possible application areas: Automated QC, automating EPG vs. actual linear playback compliance

Detecting content type

The screenshot displays a user interface for video analysis, specifically for detecting content types across a timeline.

Library: Shows a thumbnail of a red car labeled "Movie set 1:33:38".

Settings: A panel on the right lists four shows with their score thresholds:

- PIONEER WOMAN: Score threshold 1.00 / 1.00
- GAME OF THRONES: Score threshold 1.00 / 1.00
- TOP GEAR: Score threshold 1.00 / 1.00
- ULTIMATE SURVIVAL: Score threshold 1.00 / 1.00

Content Detection Results: A red callout box at the top center states "4 specific shows successfully detected". Red arrows point from this box to the numbered content blocks in the timeline below. The timeline shows a 90-minute duration (0:00:00 / 1:33:37) divided into 12 content blocks, each labeled with a number (1 through 12). The blocks are color-coded:

- Pioneer Woman: Block 2 (light blue)
- Game of Thrones: Block 4 (blue)
- TOP Gear: Block 10 (blue)
- Ultimate Survival: Block 6 (purple)

Timeline Summary: A red callout box at the bottom center states "90-minute timeline consisting of 12 different content blocks".

Detecting content type

Ingested footage (TOP Gear example)

Sources for TOP Gear

← 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 →

Abarth 595 Comp vs Abarth 124 Spider - Drag Races - Top Gear

Jack Rix

0:02 - 1:34

Alfa Romeo Stelvio QV vs Mercedes-AMG GLC 63 - Drag Races - Top Gear

RORY REID

0:03 - 1:28

Ariel Atom 3.5 vs Ariel Nomad vs BAC Mono vs Caterham 620S - Top Gear- Drag Races

TopGear.com

0:01 - 2:53

Ariel Nomad vs RR SVR - Top Gear- Drag Races

Score threshold 1.00 / 1.00

PIONEER WOMAN

Score threshold 1.00 / 1.00

GAME OF THRONES

Score threshold 1.00 / 1.00

TOP GEAR

Score threshold 1.00 / 1.00

ULTIMATE SURVIVAL

Score threshold 1.00 / 1.00

Detecting content type

The screenshot shows a video player interface with a central video frame displaying a person driving a car from an interior perspective. Below the video is a timeline from 0:00:00 to 1:30:00. At the bottom, there are four horizontal bars representing different content types:

- Pioneer Woman:** A bar with 12 segments, where segment 1 is highlighted in blue.
- Game of Thrones:** A bar with 12 segments, where segment 4 is highlighted in blue.
- TOP GEAR:** A bar with 12 segments, where segments 1 through 11 are highlighted in blue, and segment 12 is highlighted in red.
- ULTIMATE SURVIVAL:** A bar with 12 segments, where segment 6 is highlighted in purple.

A yellow box highlights the TOP GEAR bar, and a red box highlights the segment 12 of the TOP GEAR bar. A red arrow points from the text "Content type recognition by score filtering ("TOP Gear" example)" to the red-highlighted segment 12 of the TOP GEAR bar. In the top right corner, a "Settings" panel lists four items with score thresholds:

- PIONEER WOMAN: Score threshold 1.00 / 1.00
- GAME OF THRONES: Score threshold 1.00 / 1.00
- TOP GEAR: Score threshold 0.00 / 1.00 (highlighted)
- ULTIMATE SURVIVAL: Score threshold 1.00 / 1.00

Content type recognition by score filtering (“TOP Gear” example)

localhost

Library

Movie set
1:33:38

114:11 / 1:33:37

0:00:00 0:10:00 0:20:00 0:30:00 0:40:00 0:50:00 1:00:00 1:10:00 1:20:00 1:30:00

1x

Pioneer Woman

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Game of Thrones

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

TOP GEAR

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

ULTIMATE SURVIVAL

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

PIONEER WOMAN

Score threshold 1.00 / 1.00

GAME OF THRONES

Score threshold 1.00 / 1.00

TOP GEAR

Score threshold 0.00 / 1.00

ULTIMATE SURVIVAL

Score threshold 1.00 / 1.00

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Example 2: Detecting particular scenes (not objects!).

Method: Ingested 2-4 minutes footage / compilations of the corresponding actions / scenes

Result: Scenes successfully identified across multiple movies

Possible application areas: Automated compliance for violence, smoking, sexual scenes, etc.

Detecting particular scenes (not objects!)

Ingested footage (Smoking)

Sources for Smoking

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 →

1 10

11 12

localhost

Settings

SMOKING

Score threshold: 1.00 / 1.00

Min consecutive frame count: 0 / 100

ZOOM

NUDITY

Score threshold: 1.00 / 1.00

Min consecutive frame count: 20 / 100

ZOOM

localhost

Ingested footage (Violence – Artificial Blood)

The Machinist
1:41:54

Reservoir Dogs
1:39:18

Sources for Violence

50 Gallons Of Fake Blood In Bathtub! (Halloween Bath Challenge)

How Fake Blood Is Made For Movies Movies Insider

SMOKING

Score threshold 1.00 / 1.00

Min consecutive frame count: 0 / 100

ZOOM

VIOLENCE

Score threshold 1.00 / 1.00

Min consecutive frame count: 0 / 100

ZOOM

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Detecting particular scenes (not objects!)

The screenshot shows a video player interface with a library of movies on the left, a main video frame in the center, and a settings panel on the right.

- Library:** Shows three movies:
 - The Wolf of Wall Street (2:59:52)
 - The Machinist (1:41:54)
 - Reservoir Dogs (1:39:18)
- Video Frame:** Displays a scene from "The Machinist" showing a man with a beard smoking a cigarette.
- Timeline:** A horizontal timeline at the bottom of the video frame shows the duration from 0:00:00 to 1:40:00. A vertical white bar marks the current time at 0:15:09 / 1:41:54.
- Settings Panel:** Located on the right, it contains sections for **SMOKING** and **NUDITY**.
 - SMOKING:** Score threshold is 1.00 / 1.00, and Min consecutive frame count is 0 / 100.
 - NUDITY:** Score threshold is 1.00 / 1.00, and Min consecutive frame count is 20 / 100.
- Detected Scenes:** Below the timeline, two tracks show detected scenes as blue vertical bars.
 - Smoking:** Shows several short segments, notably around 0:10:00, 0:20:00, and 0:30:00.
 - Nudity:** Shows many short segments, appearing almost continuously from 0:00:00 to 1:40:00.
- Text Overlay:** A red box highlights the text "The Machinist" movie – Detected smoking scenes, nudity scenes".

Detecting particular scenes (not objects!)

The screenshot shows a video player window with a movie scene from "The Machinist". The scene depicts Christian Bale's character, Frank, sitting in a car, looking out the window, and smoking a cigarette. Below the video player is a timeline from 0:00:00 to 1:40:00. Underneath the timeline are two tracks: "Smoking" and "Nudity". The "Smoking" track shows a high-frequency, low-amplitude waveform, indicating continuous detection of smoking. The "Nudity" track shows a low-frequency, high-amplitude waveform, indicating discrete detections of nudity.

The right side of the interface is a "Settings" panel. It contains sections for "SMOKING" and "NUDITY". The "SMOKING" section has a toggle switch turned on, a "Score threshold" slider set at 0.08 / 1.00, and a "Min consecutive frame count" slider set at 0 / 100. The "NUDITY" section also has a toggle switch turned on, a "Score threshold" slider set at 1.00 / 1.00, and a "Min consecutive frame count" slider set at 20 / 100.

A red box highlights the "Score threshold" for the "SMOKING" setting. A red arrow points from this highlighted setting to a callout box at the bottom left of the interface.

"The Machinist" movie – Smoking Scenes Detection Scores

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Detecting particular scenes (not objects!)

The screenshot shows a video player interface with a library of movies on the left, a main video frame in the center displaying a scene from "Reservoir Dogs", and a settings panel on the right.

Library:

- The Wolf of Wall Street (2:59:52)
- The Machinist (1:41:54)
- Reservoir Dogs (1:39:18)

Main Video Frame:

01:34:44 / 1:39:18

0:00:00 0:10:00 0:20:00 0:30:00 0:40:00 0:50:00 1:00:00 1:10:00 1:20:00 1:30:00

1x

Settings Panel:

SMOKING (checked):
Score threshold: 1.00 / 1.00
Min consecutive frame count: 0 / 100

ZOOM: (unchecked)

VIOLENCE (checked):
Score threshold: 1.00 / 1.00
Min consecutive frame count: 0 / 100

ZOOM: (unchecked)

Timeline (Bottom):

- Smoking:** Blue vertical bars indicating smoking events. One bar is visible around 0:13:44.
- Violence:** Blue vertical bars indicating violence events. Multiple bars are visible across the timeline.

Text Overlay:

"Reservoir Dogs" movie – Detected violence scenes, smoking scenes

Page Footer:

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Detecting particular scenes (not objects!)

The screenshot shows a video player interface with a library of movies on the left, a video preview in the center, and settings on the right.

- Library:** Shows three movies:
 - The Wolf of Wall Street (2:59:52)
 - The Machinist (1:41:54)
 - Reservoir Dogs (1:39:18)
- Video Preview:** A scene from "The Wolf of Wall Street" showing Leonardo DiCaprio shirtless. The timeline at the bottom indicates the current frame is 1:14:52 / 2:59:52.
- Settings (highlighted by a red box):**
 - SMOKING:** Score threshold 1.00 / 1.00, Min consecutive frame count: 0 / 100.
 - ZOOM:** (disabled)
 - NUDITY:** Score threshold 1.00 / 1.00, Min consecutive frame count: 30 / 100.
 - ZOOM:** (disabled)
- Analysis Results:** Below the video preview, there are two tracks:
 - Smoking:** Shows one short segment highlighted in blue.
 - Nudity:** Shows multiple segments highlighted in blue, corresponding to the shirtless scene.
- Text Overlay:** A callout box at the bottom left states: "The Wolf of Wall Street" movie – Detected nudity scenes, smoking scenes.

Example 3: Detecting ad insertions, anomalies or scenes of a similar nature

Method: Video footage clusterization to detect content anomalies

Result: Ad scenes (insertions) successfully identified inside the 'feature content'

Possible application areas: Automated ad removal / replacement (for example in Linear-to-VoD packaging, etc.)

Content clustering: detecting ad insertions

The screenshot displays a video editing application window titled "localhost". On the left, a "Library" panel shows two items: "Merlin series" (0:51:45) and "My Boss's Daughter" (1:39:53). The main workspace shows a video frame of a movie poster with Russian text ("КИНОКОМЕДИЯ", "сегодня", "КАПИТАН КРЮК", "КИНОХИТ", "19:00") and a circular heatmap overlay. Below the video is a timeline with a waveform and a cluster analysis visualization. A red box highlights the "CLUSTERS" section in the "Settings" panel, which includes controls for "Number" (set to 2), "Selected" (list containing 422 and 427), "Reset", and "Display ID". Another red box highlights a callout at the bottom left pointing to the cluster analysis visualization, stating "Ad Ingestion detected in ‘My Boss’s Daughter’ movie".

Merlin series
0:51:45

My Boss's Daughter
1:39:53

localhost

КИНОКОМЕДИЯ
сегодня
КАПИТАН КРЮК
КИНОХИТ
19:00

0:08:22 / 1:39:53

0:00:00 0:10:00 0:20:00 0:30:00 0:40:00 0:50:00 1:00:00 1:10:00 1:20:00 1:30:00

0 1 0 1 0 1 0 1 0 1 0

Ad Ingestion detected in “My Boss’s Daughter” movie

Settings

CLUSTERS

Number 2 + -

Selected:
422
427

Reset

Display ID:

ZOOM

Frames in window: 2500 / 5000

COLOR SOURCE

Center Plane Heatmap

COLOR SOURCE OPTIONS

Hue: 0° / 360°

Intensity: 50 / 100

Contrast: 8.0 / 8.0

Cut-off: [0, 100]

Distribution: □

Filter: □

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Content clustering by scene similarity: decoding content DNA

The screenshot displays a video editing interface with the following components:

- Library:** Shows two items: "Merlin series" (0:51:45) and "My Boss's Daughter" (1:39:53).
- Preview Area:** Displays a video frame from a movie trailer. The frame includes text overlays: "КИНОКОМЕДИЯ", "сегодня", "КАПИТАН КРЮК", "КИНОХИТ", and the time "19:00". A circular heatmap overlay shows scene similarity clusters.
- Timeline:** Shows a timeline from 0:00:00 to 1:30:00 with a playhead at 0:08:22 / 1:39:53. Below the timeline is a waveform and a color-coded scene segmentation bar.
- Settings Panel:** Contains the following sections:
 - CLUSTERS:** Number: 100, Selected: 5, 11, 12, 14, Reset, Display ID: [checkbox]
 - ZOOM:** Frames in window: 2500 / 5000, [checkbox]
 - COLOR SOURCE:** Center (selected), Plane, Heatmap
 - COLOR SOURCE OPTIONS:** Hue: 0° / 360°, Intensity: 50 / 100, Contrast: 4.6 / 4.6, Cut-off: [0, 100], Distribution: [checkbox], Filter: [checkbox]
- Annotations:** A red box highlights the "CLUSTERS" section in the Settings panel. A red bracket at the bottom points to the "Further content clustering by scene similarity" text.
- Text Overlay:** "Further content clustering by scene similarity" is displayed in a white box with a red border at the bottom center of the screen.

Example 4: Enriching meta, granular genre identification, and more!

Method: Video footage clustering, combined with scene recognition

Result: Automatic metadata enrichment based on content itself

Possible application areas: In-depth personalization and recommendations, plagiarism detection, recognizing emotional journeys, smarter ad placement techniques, automated content highlights compilations, and muchmore!

Meta-data enrichment, granular content analysis: “Fast Five”

localhost

Library

disasters - 10% landscapes - 9.7%

bar,alcohol - 0.4% fights - 0%

races - 0% ominous scenes - 0%

food - 0% kisses - 0%

transformers fights - 0%

The.Shining
1:59:38

omnious scenes - 48.3%

cooking show - 11.1% bar,alcohol - 6.9%

kisses - 2.4% landscapes - 2.3%

fights - 0% races - 0% disasters - 0%

transformers fights - 0%

Transformers.The.Last.Knight
2:34:38

fighting transformers - 42.5% disasters - 14.3%

races - 8.3% cooking show - 3.7%

landscapes - 1.3% ocean - 1.3%

fights - 0% kisses - 0%

omnious scenes - 0% bar,alcohol - 0%

Fast.Five
2:10:21

races - 15.8% fights - 2.2%

bar,alcohol - 2.2% transformers fights - 0%

TAGS

races bars fights

RACES

Score threshold 1.00 / 1.00

ZOOM

The screenshot displays a user interface for video content analysis. On the left, a 'Library' sidebar lists three video entries: 'The Shining' (1:59:38), 'Transformers: The Last Knight' (2:34:38), and 'Fast Five' (2:10:21). Each entry includes a thumbnail, title, duration, and a summary of detected categories and their percentages. A red box highlights the 'Fast Five' entry. In the center, a video player shows a scene from 'Fast Five' with a black SUV driving. Below the video is a timeline from 0:00:00 to 2:10, with a playhead at 1:47:57. An audio waveform is shown below the timeline. On the right, a 'Settings' panel contains a 'TAGS' section with three buttons: 'races' (highlighted by a red box), 'bars', and 'fights'. It also features a 'RACES' section with a 'Score threshold' slider set to 1.00 / 1.00 and a 'ZOOM' button. Red arrows point from the 'races' button in the settings to the 'races' category in the 'Fast Five' library entry, and from the 'races' category in the library to the 'races' section in the settings.

Meta-data enrichment, granular content analysis: “Fast Five”

Ingested footage (Car Races)

Sources for races

1 2 3 4 5 6 7 8 9 10 →

Houston STREET RACING - Procharged Camaro, 850hp Hellcat, Whipple Terminator, 750hp GT-R and more!!!_Trimp2

STREET CAR VIDEO

500hp RX7 vs Supercharged Challenger STREET RACE

BEST MOMENTS OF RALLY

localhost

TAGS

races bars fights

RACES

Score threshold 1.00 / 1.00

ZOOM

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Meta-data enrichment, granular content analysis: “The Notebook”

The screenshot displays a video analysis application interface with the following components:

- Library:** A sidebar on the left containing four project entries:
 - The.Notebook**: Duration 2:03:49. Enriched tags: bar,alcohol - 8.1%, kisses - 5.7%, landscapes - 3.2%, cooking show - 2.4%, fights - 0%, races - 0%, ominous scenes - 0%, disasters - 0%, transformers fights - 0%.
 - Project.A**: Duration 1:37:51. Enriched tags: fights - 40.6%, bar,alcohol - 6.2%, ocean - 1%, races - 0%, kisses - 0%, ominous scenes - 0%, disasters - 0%, cooking show - 0%, transformers fights - 0%, landscapes - 0%.
 - Hannibal**: Duration 0:43:10. Enriched tags: cooking show - 23.2%, bar,alcohol - 9.3%, kisses - 7%, fights - 0%, races - 0%, ominous scenes - 0%, disasters - 0%, transformers fights - 0%, landscapes - 0%.
 - The.Woman.in.Black**: Duration 1:35:19. Enriched tags: ominous scenes - 17.6%, bar,alcohol - 7.9%, fights - 0%.
- Video Preview:** The central area shows a dark scene from "The Notebook" featuring a woman lying down. Below the video is a timeline from 0:00:00 to 2:00:00, with the current frame at 0:32:29 / 2:03:49. A waveform audio track is visible below the timeline.
- Tags Panel:** A panel on the right labeled "Settings" contains a "TAGS" section with four selected tags: **kisses** (highlighted in blue), **landscapes**, **bars, alcohol**, and **cooking show**.
- Score threshold:** A slider labeled "Score threshold" is set to 1.00 / 1.00.
- ZOOM:** A zoom control button is located next to the score threshold slider.

Red arrows and boxes highlight specific features: one arrow points from the "kisses" tag in the Settings panel to the吻 (Kisses) tag in the Project.A enrichments; another arrow points from the吻 (Kisses) tag in the Project.A enrichments to the吻 (Kisses) tag in the audio waveform; a third arrow points from the吻 (Kisses) tag in the audio waveform to the吻 (Kisses) tag in the Settings panel's TAGS list.

Meta-data enrichment, granular content analysis: “The Notebook”

Ingested footage (Kisses)

Sources for kisses

← 1 2 →

41 sweet kiss scene korean drama 2018.

Bhojpuri non stop kissing (online-video-cutter.com)

ONLY Hot Video BHOJPURI CINEMA

HRITHIK ROSHAN KISSING SCENES IN BOLLYWOOD MOVIE TOP 5 HRITHIK ROSHAN KISSING SCENES

Meghan Markle Wedding Scene On Suits Meghan Markle Rachel Kissing Scenes

localhost

TAGS

kisses landscapes bars, alcohol cooking show

KISSES

Score threshold 1.00 / 1.00

ZOOM

Project.A 1:37:51

fights - 40.6% bar,alcohol - 6.2%

ocean - 1% races - 0% kisses - 0%

ominous scenes - 0% disasters - 0%

cooking show - 0% transformers fights - 0%

landscapes - 0%

Hannibal 0:43:10

cooking show - 23.2% bar,alcohol - 9.3%

kisses - 7% fights - 0% races - 0%

ominous scenes - 0% disasters - 0%

transformers fights - 0% landscapes - 0%

The.Woman.In.Black 1:35:19

ominous scenes - 17.6% bar,alcohol - 7.9%

fights - 0%

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Meta-data enrichment, granular content analysis: “2012”

localhost

Library

The.Woman.in.Black
1:35:19

ominous scenes - 17.6% bar,alcohol - 7.9%

landscapes - 6.1% fights - 0%

races - 0% kisses - 0% disasters - 0%

food - 0% transformers fights - 0%

2012
2:37:49

disasters - 10% landscapes - 9.7%

bar,alcohol - 0.4% fights - 0%

races - 0% ominous scenes - 0%

food - 0% kisses - 0%

transformers fights - 0%

The.Shining
1:59:38

ominous scenes - 48.3%

cooking show - 11.1% bar,alcohol - 6.9%

kisses - 2.4% landscapes - 2.3%

fights - 0% races - 0% disasters - 0%

Transformers.The.Last.Knig
2:34:38

fighting transformers - 42.5% disasters - 14.3%

Settings

TAGS

disasters bars, alcohol landscapes

DISASTERS

Score threshold 1.00 / 1.00

ZOOM

0:49:30 / 2:37:49

0.00:00 0.10:00 0.20:00 0.30:00 0.40:00 0.50:00 1:00:00 1:10:00 1:20:00 1:30:00 1:40:00 1:50:00 2:00:00 2:10:00 2:20:00 2:30:00

1x

disasters

A screenshot of a video analysis application interface. On the left, a 'Library' sidebar lists several video titles with their duration and a summary of detected tags. The '2012' entry is highlighted with a red box. The main area shows a video frame of a plane crashing on a runway, with a timeline below it. A red bracket points from the '2012' entry in the library to a zoomed-in view of the timeline for the 'disasters' tag, which shows several blue vertical bars indicating detected events. The top right corner shows 'Settings' for the 'disasters' tag, including a score threshold slider set at 1.00/1.00 and a zoom control.

Meta-data enrichment, granular content analysis: “2012”

Ingested footage (Disasters)

Sources for disasters

← 1 2 3 4 5 6 7 →

Natural Disasters Caught On Video 2018 !

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17 BEST Building Demolitions EVER 💣🏡💣 [TNT Channel]

2011 Japan Tsunami Ofunato [stabilized again with Deshaker]

localhost

Tags

disasters bars, alcohol landscapes

DISASTERS

Score threshold 1.00 / 1.00

ZOOM



Schedule a demo

Reach out to our experts to discuss the details of your business case and find the most effective solution to your video processing problem.

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