

Uncovering Dark Video Data with AI

How Watson Video Enrichment
can provide better decision-
making data and unlock new
business possibilities in the
media industry.

“...today’s video industry still depends on coarse indicators of content to organize titles, make recommendations and help users navigate their way through a vast array of choices.”

Director Adam McKay’s 2015 movie “The Big Short” is an Oscar-winning examination of the mid-2000s housing market bust, portraying through three interlaced stories a convergence of decisions that nearly led the U.S. to economic ruin. Although the movie contains some moments of levity, it’s not exactly a laughable subject. Even so, within the user interface for one prominent subscription video-on-demand service, “The Big Short” could recently be found in the Comedies section, not far from Dreamworks Animation’s “Trolls” and Disney’s animated feature “Lilo and Stitch.”

The incongruence illustrates how today’s video industry still depends on coarse indicators of content to organize titles, make recommendations and help users navigate their way through a vast array of choices. Despite advances in content presentation and considerable efforts to develop more relevant recommendations, most of the video industry still relies on surface-level metadata to sort through available video titles. The result is often a puzzling categorization that defies reasoning – and in some cases dissuades users from sampling content they’d almost certainly enjoy.

This disparity in the way content is displayed and recommended is just one example of how video content owners and distributors struggle to deal with ever-expanding content libraries. Similar struggles arise from the demand for content compliance – guarding against inappropriate or objectionable material, for instance – and the ongoing need to archive, catalogue and identify video with efficiency and speed.

The culprit behind any of these challenges is known as “dark data” or “unstructured data,” meaning the absence of visibility into what matters most – the actual makeup of video content, moment by moment, from a contextual perspective. Business intelligence is only as good as the data that feeds it, so inaccessible or unstructured video data offers little value to media brands and broadcasters alike. For decades now, most video has been just that: dark data.

All of this is starting to change, and for the better.

Inventive new applications of machine learning – an approach that humanizes the way media content is examined, evaluated and described – are making it possible for video industry participants to become more adept at understanding the unique makeup of any video asset, from a brief news clip or sports highlight to a full-length motion picture or TV series.

Why does this matter? Because what used to be inaccessible or “dark” data, unlocked by the power of artificial intelligence, enables producers and distributors to see their content in completely new ways — and arms them with powerful new insights to identify, organize, and optimize their content to achieve tangible business objectives. In short, it provides advanced video insights for advanced decision-making.

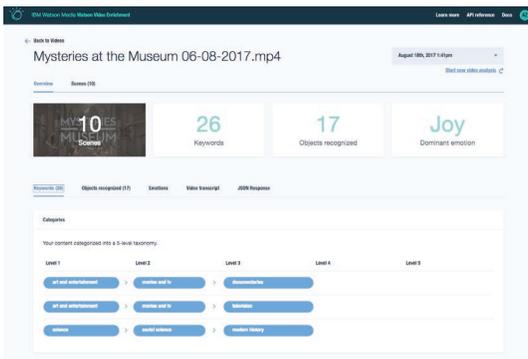
Watson Video Enrichment, the first of a suite of IBM Watson Media solutions, touches on nearly every aspect of today’s video business, from archiving video footage and recommendation optimization to the way advertising messages align with content appearing onscreen. Here are just a few examples of how IBM is bringing the power of cognitive to the media and entertainment industry:

Stand out in a crowded field:

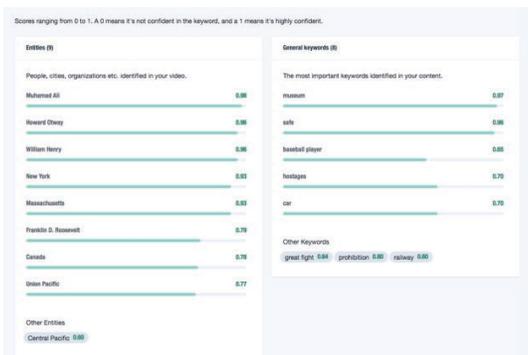
Consider two multichannel video providers that offer nearly identical content. One manages to create extraordinary subscriber experiences that produce high satisfaction and reduce churn, while the other cultivates frustration as customers search fruitlessly for something to watch, or end up not enjoying what they do watch. The difference: application of Watson Video Enrichment techniques that optimize content search and discovery to match viewer preferences. These techniques rely on content analysis that transcends the general nature of legacy metadata descriptions to encompass emotional tone and sentiment within a video, subject detail and context, personality and much more. As a result, providers are able to more precisely align video assets with viewer desires.

How it works:

The Watson Video Enrichment Application Program Interface (API) delves deep into assets to examine tone and personality, visual recognition (of people, places, objects and more), dialogue, language taxonomy and words/sounds. Using this API, Watson performs a frame-by-frame, word-by-word, moment-by-moment examination of any meaningful aspect of the content: images, words, sounds, emotions, actors, scriptwriting, objects and more. It then identifies scenes within long-form content and breaks the video into semantically logical scenes, applying cognitive tools to analyze and associate identified items with the scenes. Armed with this expansive collection of data, Watson then performs intricate analysis of the surfaced data to uncover relationships among these and other indicators, producing previously unseen (and in fact, unsee-able) insights. Dark video data becomes illuminated and possibilities for more nuanced description, presentation and recommendation of content choices widen dramatically.



Watson watches a video and begins extracting metadata. Watson automatically detects the number of scenes, keywords, objects, and emotions within a video, and builds easily searchable metadata packages for every asset in your library.



Watson identifies and categorizes specific entities including known people, cities, and organizations. It will also capture high-level concepts, themes, and keywords related to your video.

Make smarter content decisions.

It's no longer enough to realize a particular title performed well according to usage analytics. The more important question is "why?" Watson Video Enrichment surfaces insights that were previously obscured: anything from the relationship between scriptwriters and music soundtracks to surprising relationships involving performers, settings, subjects and emotional tone. Gaining more nuanced understanding of what makes content appealing can help providers improve cost/benefit analysis, make more informed decisions surrounding content creation and acquisition, and improve customer usage and satisfaction levels to reduce churn. Just as important, the application of machine learning makes it possible to reveal these insights rapidly, removing the manual labor burden associated with evaluating and cataloguing thousands of titles.

How it works:

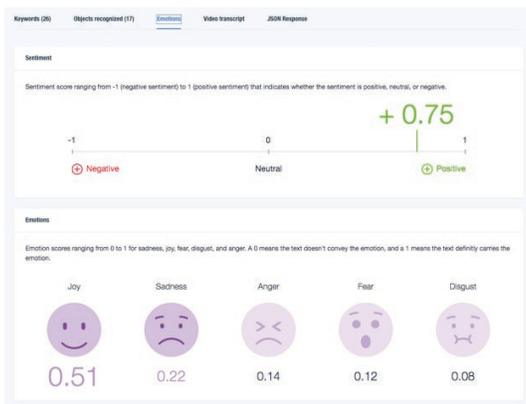
By evaluating audio and textual content using Natural Language Understanding (NLU) technologies to analyze semantic features of text input – including areas such as categories, concepts, emotion, entities, keywords, metadata, relations, semantic roles, and sentiment – Watson enables important constructs to rise to the surface, revealing data that can be used to connect what previously seemed to be disparate concepts. What's more, Watson continually improves as new versions of cognitive components are included and as supporting contextual information – such as social media interchange and news developments – change over time.

Improve advertising ROI.

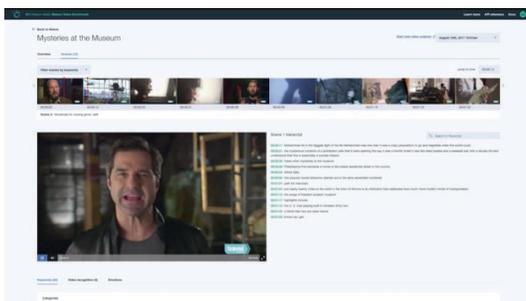
The traditional approach for injecting advertising messages into video streams remains essentially unchanged from television's earliest days: commercials pop up in pre-ordained breaks regardless of what just appeared on the screen. This is true not just in traditional linear television but even within the more targeted environment of Internet video. Although messages may be aligned with particular audiences, they almost always occur without regard to moment-by-moment content. Video Enrichment changes this essential equation by making it possible to create less intrusive and more content-congruent messaging within the body of a video asset. For example, a commercial message with a softer, emotional appeal may appear within a like-minded moment in a movie or episodic series. Conversely, an action-intensive advertisement can be precisely aligned with a game-defining play during a live sports event. Either way, value to the advertiser is enhanced as messages flow more naturally into the content stream, producing deeper viewer engagement as a result.

How it works:

By analyzing granular ingredients that feed into the whole and applying previous external learnings, Watson is able to understand the essential makeup of video content. As a result, Watson is able bring context to advertisements by identifying and designating logical points of insertion for content-congruent or affinity-minded sponsorship messaging. Coupled with video logistics processes that mark these identified points within a video asset, it becomes possible to automate ad insertion by whatever designation a television network, content licensor or broadcaster elects to present to advertisers.



Watson can even detect sentiment and emotion. For example, Watson can determine the dominant emotion of a video like joy, sadness, or anger.



Closed captioning is another key industry challenge. Watson automates this as well, providing transcripts that are timed and broken out by scene.

“Watson Video Enrichment is all about maximizing the value and performance of video.”

Achieve better, faster asset organization.

Growing content libraries and easy archiving don't exactly go hand in hand. At least until now. Watson Video Enrichment makes it possible for programmers, producers and content owners to examine, catalogue and access enormous libraries with greater speed and dexterity than ever before. Drawing on language transcription APIs, it's possible to examine and evaluate enormous amounts of content so that even brief segments of existing video can be located, summoned and manipulated almost instantly. The results include significant savings in manual processing tied to content compliance, cataloguing and archiving tasks, along with the ability to harvest significantly greater value from previously produced assets.

How it works:

Watson transforms content organization from a labor-intensive, manual process to a highly dexterous, automated approach by providing speech-to-text, metadata logging, scene segmentation and other techniques that enable rapid detection and catalogue of individual components of video content. Efficiencies arise because the object being examined is a data record, not a linear video presentation that must be viewed and evaluated in real-time.

As the name implies, Watson Video Enrichment is all about maximizing the value and performance of video. Leveraging Watson's leading artificial intelligence capabilities, businesses are able to make more informed content decisions that drive their bottom line. Improving search/recommendation approaches, making more educated content decisions, optimizing advertising opportunities and injecting new efficiency into video management are among the early-stage capabilities enabled by pairing video content and machine learning. As the days of “dark data” are replaced by unprecedented visibility, the video industry has an opportunity to improve nearly every important aspect of the business. Including the way great films like “The Big Short” find their way to movie lovers.

© Copyright IBM Corporation 2017

IBM Cloud Video
550 Kearny Street, Suite 600
San Francisco, CA 94108

Produced in the United States of America
August 2017

IBM, the IBM logo, ibm.com, and Watson are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at <http://www.ibm.com/legal/us/en/copytrade.shtml>

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

The information in this document is provided “as is” without any warranty, express or implied, including without any warranties of merchantability, fitness for a particular purpose and any warranty or condition of non-infringement.

IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

Statement of Good Security Practices: IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed or misappropriated or can result in damage to or misuse of your systems, including to attack others. No IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. **IBM does not warrant that systems and products are immune from the malicious or illegal conduct of any party.**

