VIDEO BIG DATA

Extract. Transform. Analyze.

Videospace by Babbobox
www.videospace.co

Video Big Data - An Introduction

Fact: YouTube sees more than 2,500 new videos uploaded every minute. That's 1.3 TRILLION worth of new videos in a single year! And that's just YouTube alone! If we add all other videos in the public domain, we wouldn't even know where to start with the numbers.

However, the even bigger numbers are actually hidden in the private domain from sources like broadcasters, media companies, CCTVs, GoPros, bodycams, smart devices, etc. We are recording videos at an unprecedented pace and scale.

Which brings us to Video Big Data. Or should I say the lack of it. Even the term "Video Big Data" is rarely heard of. The reason is pretty simple – this stems from the inability to extract video data and making sense of it. But there is so much information embedded inside videos that is waiting to be discovered, it's an absolute goldmine! Therefore, we predict that…

Video Big Data will be bigger than Big Data

The REAL question is…

How can we extract value from videos?

The problem with video is that it is the most difficult medium to work with and to extract data from. There are a few reasons why:

- There are many elements inside a video (speech, text, faces, objects, etc)
- Difficult to extract the various elements of video data
- Each element requires a different data extraction technique
- Videos are not static
- It is very difficult to make sense of video data because of its unstructured nature
- It's expensive to extract data at scale

These problems are real and has been preventing the arrival of the Age of Video Big Data. However, with the various advances in the field of Artificial Intelligence and Big Data, we are beginning to have an appreciation of the numerous issues we are facing.

With the substantial use of a combination of different branches of Artificial Intelligence, **Videospace** is beginning to crack this enigmatic problem.

What Kind of Video Data?

In this section, we will examine the kind of video data elements and a brief methodology on how we can extract from videos.

1. Speech

In a hour of video, a person can say up to 9,000 words. So imagine the amount of data just from speech alone. However, the process of transcribing speech is filled with problems and we are currently only starting to get an acceptable level of accuracy.

2. Text

Besides speech, text is probably the second most important element inside videos. For example, in a presentation or lecture, besides speech the speaker would augment the session with a set of slides. Or news tickers appearing during a news broadcast.

3. Objects

There are thousands of objects inside a video within different timeframe. Therefore, it can be quite challenging to identity what objects are in the video content and in which scene they appear in.

4. Activities

The difference between video and still images is motion. Different video scenes contain complex activities, such as "running in a group" or "driving a car". Ability to extract activities will give a lot of insight what the videos are about. This includes offensive content that might contain nudity and profanity.

5. Motion

Detecting motion enables you to efficiently identify sections of interest within an otherwise long and uneventful video. That might sound simple, but what if you have 10,000 hours of videos to review every night? That's a near impossible task to eyeball every video minute.

6. Faces

Detecting faces from videos adds face detection ability to any surveillance or CCTV system. This will be useful to analyze human traffic within a mall, street or even a restaurant or café. Not too long into the future, we can include automatic facial recognition of celebrities or famous people. When we include facial recognition, it opens up another data dimension.

7. Emotion

Emotion detection is an extension of the Face Detection that returns analysis on multiple emotional attributes from the faces detected. With emotion detection, one can gauge audience emotional response over a period of time. It's great for behavioral analytics for situations like focus groups, interviews or even interrogation.

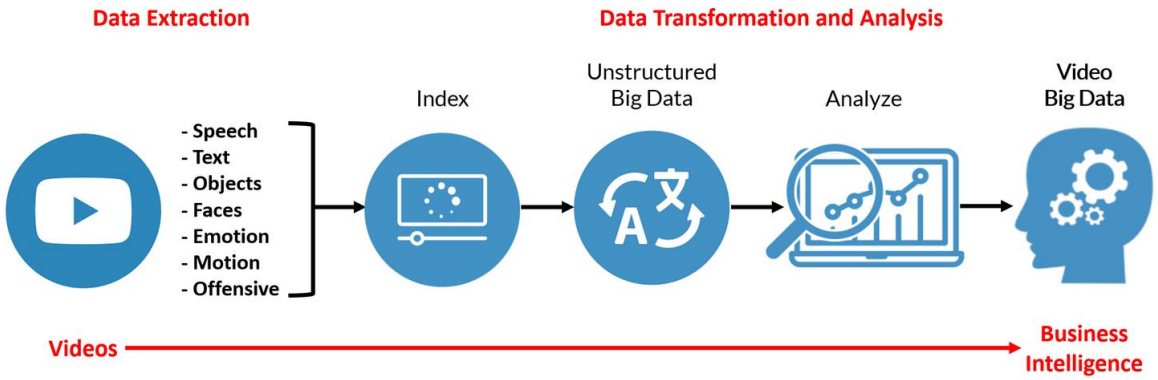
8. Custom Search

Looking for something specific? Perhaps a specific logo, landmark or object? It is possible to train the Videospace AI Video Search Engine to search for something specific to your need.

This list of video data is certainly not exhaustive but is a definitely a good starting point to the field of Video Big Data.

From Mess to Intelligence

The objective of Big Data is to gain Business Intelligence. Video Big Data is no different. The obvious difference is the source and the type of data that can be extracted out from videos. In there, lies the main challenges.



In this segment, we will explain why Artificial Intelligence is central to the clearing the "mess" in video big data.

In the earlier sections, we talked about:

- Why Video Big Data will absolutely dwarf current Big Data?
- How Video is the most difficult medium to extract data?
- the kind of data elements that we can extract from videos (speech, text, objects, activities, motion, faces, emotions)

Before we proceed further, let's examine why there is a mess in video data.

The short explanation would be because a large part of video data is unstructured data. In particular, data from speech and text. For example, text extracted from a 30 minutes news segment could cover multiple topics and events, mentioned numerous places and persons. To add to the complexities, we have to time-aligned when these words are spoken. In many ways, text (e.g. slide presentations that appear in videos) are the same.

Thus, we have to answer 2 key questions:

1. How do we meet sense of 'messy' video data?
2. How can we extract knowledge or intelligence from that mess?

The answer lies in another form of Artificial Intelligence (A.I.) - the study of Natural Language Processing (NLP). That is because it can process and attempt to make sense of unstructured text in the by extracting topics, key phrases and performing sentiment analysis.

NLP techniques can be used to TRANSFORM unstructured video data into structured data. Only then can we start to ANALYZE and making sense of the date to manipulate into either intelligence or actionable items like alerts, triggers, etc. The possibilities are limited only by our imagination.

The field of Video Big Data is just emerging. Without the advancement in multiple areas of Artificial Intelligence in multiple areas (Speech Recognition, Computer Vision, Facial Analysis, Text Analytics, etc.), Video Big Data wouldn't even exist as it needs these fields to work in tandem or in sequence.

Given the rate that we are producing videos, alongside our ability to extract video data using A.I. The only way is up as we are not even close to uncovering the tip of Video Big Data iceberg.

The competitive advantage possibilities are simply immense. Can we afford to ignore Video Big Data? Only at our own peril!

==========

To keep updated on Video Big Data, please subscribe to our newsletter at www.videospace.co.