Second International Symposium on Computer Vision and the Internet (VisionNet’15)

Video Search Engine Optimization Using Keyword and Feature Analysis

Krishna Choudhari\textsuperscript{a}, Vinod K Bhalla\textsuperscript{b}

\textit{Thapar University, Patiala, 147001, India}

\textbf{Abstract}

Growth of internet touched upon every sphere of life. Business is no exception to it. More and more companies and individuals are bringing their business online. Now a days videos are used as a tool to advertise and promote the business. Enterprises upload relevant videos on such promotional sites so that people can extract the most relevant video content. Users tend to choose the top ranked and the most viewed videos irrespective of their relevance. So, the key to provide suitable content is Video Search Engine Optimization (VSEO). This research paper proposes a method to optimize the video rank by exploiting video search engine’s searching strategy that will eventually lead to increase in number of views of videos with higher ranks and thus promoting corresponding website for every visit. For experimental purposes, youtube.com has been considered. To promote white hat SEO, a technique is suggested that uses keyword tags in title, description and transcript. Ranks of videos are analysed before and after VSEO. The main idea of the proposed strategy is to select appropriate keyword tags based on navigational search queries, transactional search queries and informational search queries.

© 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Peer-review under responsibility of organizing committee of the Second International Symposium on Computer Vision and the Internet (VisionNet’15)

\textit{Keywords:} Video SEO; Keyword Research; Video Ranking;

Krishna Choudhari. Tel.: +91-9403304807;  
\textit{E-mail address:} Krishna.dchoudhary@gmail.com
1. Introduction

There has been a tremendous growth in digital market recently, because of the focus shift to visual content and video broadcasting for marketing. The increase in the bandwidth provided by the telecom's Internet Service Providers (ISPs) has resulted in lag-free billions of hours of videos being watched on various video search websites. Publishing a video on the internet is the cheapest source of advertisement as compared to conventional TV advertising campaign. Therefore, many commercial organisations are emerging with their channels on video search websites where they publish and earn money though the traffic fetched by the video, also it is easy for them to link it with company’s main website & other social media. By using video search engine we have an option of watching different videos and whatever we choose to watch fetches suggestions for other related videos. Through video search engine we can recommend and share videos with our family and friends. These videos become visible to them in their related videos option. In order to increase the view of videos, producer has to make effort to boost the ranking of the video, this process is called video engine optimization. Thus higher the rank in the search result, the more will be the count of visits received, which brings more sales revenue through the website visits. Many believe that delivering lot of related videos will result in top ranking, but it is true only if the content is purely excellent, it will get views by people and thus reinforcing the prominence of the content. The videos that are ranked at top in search results do not only rely on the content but also on content delivery’s right format.

Though creating great content to attract the traffic to your video is the key to get high rank, but if the objective is to increase the number of views then the content must be helpful to the user, informative, shareable and powerful, also there are several other techniques that boost the ranking of the video. There are different criteria on which video search engine searches the video, although these criteria are specific to the search engine provider but there are some basic criteria which are common to all search engines.

2. Related work

The framework retrieves visual information on the basis of feature extraction that improves the effective search on video on the basis of frame and image processing of the video. The relevancy of video search can be improved with the query processing on the basis of metadata about the multimedia. The keyword from the video on the basis of speech recognition engine help to understand the working principle of modern video search engine. It focuses on enabling the jump on the scene of video by querying the keyword to help user to check relevancy of the video and to save time. The extraction of keyword which involves image processing techniques to summarize the video content and other features of media content like thumbnail, subtitle generation, annotation help the learner to know about the video. As the users tend to watch more relevant videos, this feature helps the engine to achieve more relevancy in its search operation. Closed caption and Annotation makes the video more searchable and this was introduced by Microsoft’s project Tuva.

3. Prominence feature of Video Search Engine Optimization

3.1 On basis of site optimization: This is done by using the time of publishing the video.

- Keyword research
  Keyword analysis is the most important part of optimization. Similar to the keyword research for online marketing by SEOs of websites, one has to target audience of video SEO and have to do research what the audience will place as keyword inside the search engine. This keyword analysis is provided by some keyword analysis tools like Google Adwords, Youtube keyword suggestions, query log analysis, etc.

- Video tags
  While uploading any video to any video search engine, one should keep that video name relevant to the keyword. Keeping the different video name like vo231232.mov will create ambiguity to the robot or automatic feature extraction system of video search engine.
• Title
  Title possesses important meaning in placing a video in the top search results because most of the search engines search the queries related to the titles. Placing the keyword in the title helps the viewers to click on the video as it seems to be the most related video according to their search. One should try to keep a title that catches the eye of the viewer.

• Description
  Describing the video is all about creating the interest of the viewer to definitely watch the video. Viewer gets the idea related to details of the video and thus is deciding factor for the viewer to view that video or not. Also put information related to the company like location, date of event, name, and phone number. First line of description should be company’s URL which will help to direct the viewers on to the company’s website. The information inside the description should not be too large to read as the viewer came to watch your video and not the description of the video. The first few lines should target the audience and be able to tell what the video is all about.

• Thumbnail
  Frames from the videos are treated as thumbnails. These are mostly auto-generated but often custom thumbnail are preferred. It’s the first look of the video and gives the picture about what’s inside the video. This is a key factor for inviting the viewer.

• Video Transcript
  Many video search engines give the facility to put transcript of the video. Many engines check the transcript to suggest the related result to the user. It is just like timeline or subtitle of the video so one should also put the keywords inside the transcript.

• Annotations
  Annotations provide facility of embedding external links to your website. It is an important aspect, as it links to your website and will either be shown during full video length or as per the time of appearance set by the uploader. Thus if viewer likes your video and decides to go to your website then providing this direct link on the video will increase the visits to your website.

3.2 Off site optimization: It is done after publishing the video for the public.

• Views
  This is main motive of video search engine optimization. After considering rank of the video in the search result, next factor is views that the video has. Larger the views, larger is the chance of viewer to watch your video and this invites more traffic to your video.

• Shares
  The presence of video on the social networking sites like Facebook, twitter, Google+ will invite more number of views to you video. Many people don’t go to search engines to watch the videos, they might like to watch those video that are shared by friends present on some social website.

• Comments
  This shows to the search engine that whether the video got attention of the viewer till the end. It also helps the engine to know that whether the video has appropriate content or not.

• Channel Authority
  If all the videos are linked with your channel then people are more likely to subscribe the channel. This also helps search engine to recognize your video relying on the fact that videos from your channel are mostly authentic.
4. Psychology Analysis of user search queries

During the searching activity, SEO professionals not only concentrate on keywords but also understand that the behaviour of searching query is equally relevant. The basic three category into which searches are divided are:

4.1 Navigational search queries
In this type user enters other website name into search engine rather than directly feed into URL. Example: user enters “olx” into search engine rather that entering into URL, www.olx.com. Google categories this searches as “go queries”. This is not always the case, user might be entering “olx” in search not to visit the website but only to read its news and information.

4.2 Informational search queries
Generally user enters long descriptive query to get information on some particular target website which is called informational query. Mostly they are looking for some information or probably they need the answer to questions. Google makes knowledge graph to show the result for such queries.

4.3 Transactional search queries
This type of query includes transactional keywords or user enters some queries to perform transaction after purchase of the product. For example user searches: “Lenovo laptop” and also used “buy”, “purchase”, “order”, etc. like keywords. Study found that most of the times, people click on the paid sites rather than unpaid results.

5. Methodology

We have proposed this methodology that considerably improves ranking of video in search engine. We studied different processes of video search engines and their upload strategy, we found out that most of the search engines have provided almost same features while uploading any video. Analysis of query log help us to identify keyword tag lists. On the basis of video search engine’s features, we created a feature set. Basic main feature set consist of all the features {Title, Description, Tags, Thumbnail, Transcription, Annotation, Share, and Comment}.

Feature vector \( F_v \) = \( \{f_1, f_2, f_3, f_4, ..., f_n\} \)

\( F_1 = \{\text{Title, Description}\} \),
\( F_2 = \{\text{Title, Description, Tags}\} \),
\( F_3 = \{\text{Title, Description, Transcription}\} \),
\( F_4 = \{\text{Title, Description, Transcription, Annotation}\} \),
\( F_5 = \{\text{Title, Discretion, Transcription, Annotation, Share}\} \).

Keyword set are derived from keyword suggestions by Google, YouTube and keyword suggestion tool.
Keyword set \( K_s \) = \( \{k_{l1}, k_{l2}, k_{l3}, ..., k_{ln}\} \)

\( K_s = \bigcup_{i=1}^{n} k_{li} \) \& \( k_{li} \in K_s \)

We performed the experiment on the basis of 10 video set and collected the result. Among those we took example of one video which is uploaded with title “video lecture for beginner”.

\( k_{l1} = \{\text{video, lecture, beginner}\} \)
\( k_{l2} = \{\text{java, tutorial, video, lecture}\} \)
\( k_{l3} = \{\text{best, java, video, lecture, beginner, certified, trainer, non CSIT}\} \)
\( k_{l4} = \{\text{java, lecture, beginner, programming, language}\} \).
Ql is the query list that based on psychology of analysis of user search queries.
Ql = \bigcup_{i=1}^{n} Qli
Ql = \{Ql1, Ql2, Ql3, ..., Qln\}

FS – kli = optimize feature set (Fs) with keyword list (kli).

![Fig 1: Methodology for VSEO.](image-url)
6. Result

Study shows that keyword selection is important. Table 1 shows the Placement of the keyword in the feature improves the ranking of the video significantly. Table 2 shows ranking of video with different queries. Video attribute like share and comments helps the search engine to gain the trust for the video.

<table>
<thead>
<tr>
<th>kl1</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
</tr>
</thead>
<tbody>
<tr>
<td>kl1</td>
<td>416</td>
<td>411</td>
<td>382</td>
<td>382</td>
<td>351</td>
</tr>
<tr>
<td>kl2</td>
<td>260</td>
<td>251</td>
<td>238</td>
<td>238</td>
<td>211</td>
</tr>
<tr>
<td>kl3</td>
<td>84</td>
<td>64</td>
<td>34</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>kl4</td>
<td>619</td>
<td>612</td>
<td>579</td>
<td>579</td>
<td>560</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q1</th>
<th>Fs - kl1</th>
<th>Fs - kl2</th>
<th>Fs - kl3</th>
<th>Fs - kl4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 1</td>
<td>215</td>
<td>245</td>
<td>7</td>
<td>345</td>
</tr>
<tr>
<td>Q 2</td>
<td>226</td>
<td>226</td>
<td>35</td>
<td>360</td>
</tr>
<tr>
<td>Q 3</td>
<td>351</td>
<td>211</td>
<td>16</td>
<td>560</td>
</tr>
<tr>
<td>Q 4</td>
<td>254</td>
<td>207</td>
<td>13</td>
<td>553</td>
</tr>
<tr>
<td>Q 5</td>
<td>401</td>
<td>364</td>
<td>159</td>
<td>721</td>
</tr>
</tbody>
</table>

Fig 2. (a) shows keyword list kl1 with feature f1 to kl5 with f5, in which keyword list kl3 with feature f5 is result with most significant improvement in the rank. Decreasing status of the bar graph represents improvement in the rank.

In Fig 2 (b) the lowest line shows the combination of fully optimized feature set and keyword list k13 which says that once the combination is established in ranking, then video search engine places that video on the top of pages even if query changes relevantly.

Fig. 2. (a) Analyse of rank on the basis of keyword list vs feature; (b). Analysis of the different query with optimize feature set and keyword relation.

7. Suggestion for improvement in rank

Many search engines use feature detection strategy on the video to get basic information of the content of the video. As the results show that keywords are an important factor to decide ranking of the video, placement of appropriate keywords is important to boost the ranking. Understanding of user query helps to identify keywords that are essential for video. By over usage of the keywords by publisher, the video can be penalized by search engine. It can also happen when the content is not original and trustworthy.
8. Conclusion & Future work

In this study, we have analysed the video tube features for exploring the area of VSEO. Our main focus was on video search optimization, our methodology identifies key attributes for a video while searching, and showing video search engine is keyword selection strategy, which is deciding factor for ranking of video. Our experimental results show significant improvement in the ranking as per the methodology. This technique can be applied and explored on other video search engines as well.

References