

A note on Interesting Facts on Information Retrieval Systems

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ABSTRACT

The purpose of this note is to provide various facts on information retrieval systems so that it will be useful for researchers and faculty members, thus saving a lot of time in literature survey. We also provide a good amount of reference papers in this note.

Key words: Information retrieval, Analysis, Assessment, Content-based

1. INTRODUCTION

The increasing amount of data existing on the Web has created novel and testing issues for the data recovery group. Owing to the gigantic number of pages and connections, surfing can't be resorted to as a liberal looking strategy, even with the help of subject index or arranged records (e.g., Yahoo!). Consequently, a capable question dependent strategy for entrée data is required. They are used by 85% of Web clients as the important device in for data seekers. Recovery components right now prescribed by Leighton & Srivastava, Gordon & Pathak rely upon conventional IR models. These web indexes are not sufficiently skill full to wrap all available data. Late works in Web IR has licensed that hyperlink structures are to a great degree. The primary IR frame-work executed in the 1970's intended to work with a modest collection of content.

2. VIDEO RETRIEVAL SYSTEM

The video is a straight medium which comprises an arrangement of frames that can be sensibly prearranged into shots. The video is characterized by the flanking set of edges taken by a solitary unremitting camera after some time. Shots can also be grouped into legitimate or semantic units residency scenes. Advantaged levels of abstraction can be produced by arranging the shots or scenes into a string of recitations like a storyline.

3. CONTENT BASED VIDEO RETRIEVAL SYSTEM

CBVR is considered as the use of picture recovery, that is, the issue of sharp for computerized recordings in vast databases. "Content-depend" implies that the pursuit investigates the genuine substance of the video. The expression "Substance" in this system may indicate hues, shapes and surfaces. From the time when it doesn't have the capacity to investigate the video content, investigation needs to rely upon pictures offered by some client. Content-depend Video Retrieval (CBVR) strategy has all the earmarks of being an intrinsic centre (or blend) of Content-depend Image Retrieval (CBIR) frameworks. By the by, different variables must be focused on while utilizing recordings that are disregarded while overseeing pictures. The ensuing four key procedures are involved in substance depend in video ordering and recovery. Segmenting the video into element scenes is an essential stride during the time spent in video structure parsing. This video is fragmented into edges with comparative visual stuffing. This is performed by sectioning the visual data encased in the video outlines. A discourse constituent that happens with them is hopeless to be proficient in grasping this objective. Video files and the table of stuffing can be produced rely upon these angles. For example, a bunching procedure yields differing visual classes or an ordering structure by sorting groupings or shots.

4. SIGNIFICANCE OF SPORTS VIDEOS

A Sports video depicts a far-reaching combination of gatherings of groups of onlookers and is ordinarily communicated for an extended span of time. For a good number non-sports viewers and a few games fans, an unadventurous and packed version seems more enticing than the full-length video. For as far back as a decade, researchers over the globe have productively focused on deciding convincing responses to mechanize the semantic investigation of games video embodiment. Thus, different calculations and structures have assigned solid results for a few sports.

5. VIDEO AND AUDIO DENOISING

The approach is the single-finished or non-correlative type, which uses strategies to reduce the noise level officially displayed in the source material - basically a playback just clam or decrease framework. Video signals are frequently polluted by noise during achievement and transmission. Reducing noise in video signals (or video de-noising) is exceedingly alluring, as it can upgrade perceived image quality, increase compression effectiveness, encourage transmission bandwidth reduction, and enhance the correctness of the probable subsequent processes such as feature extraction, object detection, motion tracking and pattern classification.

6. SHOT SEGMENTATION OF VIDEO AND KEYFRAME EXTRACTION

At the point when the ostensible unit of visual data is kept one time as a Video shot by a camera, it is to show a guaranteed activity or occasion. Shot discovery is connected as an essential stride of substance based video investigation with the goal of catching the total visual substance suitably and to accomplish a whole handle of the video. A definitive objective of video shot limit is recovering the element of video picture outlines. These are moreover utilized to incorporate such traditions. Subsequently, a master SBD algorithm is to be furnished to handle trudging shot moves, paying little attention to their temperament (break down, blur, wipe and so on.) well beyond startling changes.

7. FEATURE EXTRACTION AND OPTIMIZATION

Optimization is the process of selecting the optimal solution for corresponding input. Some of the papers are related to image retrieval using the optimization algorithm. Xu Zhang et al. discussed the picture recovery optimization with PSO with r-choice and k-choice of Ecology. He demonstrated r/k PSO with positive and negative criticism tests to improve the picture recovery by changing the weights in the light of the client input. Button Chin Lai et al. demonstrated the decrease of a semantic crevice between abnormal state test components and low level example elements to achieve the expected picture by the Genetic Algorithm as an optimizer.

8. FEATURE-BASED VIDEO INDEXING

In some phase over the span of activity of indexing texts, an archive is separated into smaller components, for example, areas, passages, sentences, phrases, words, letters, and numerals. Consequently, signs can be built on these components. Utilizing an indistinguishable plan, a video can likewise be rotting into a chain of importance. This is indistinguishable to the storyboards in filmmaking. Various video indexing methods are follows: Object-depend Video Indexing Methods, Event-depend Video Indexing Methods. Event-based video ordering is a target to be familiar with the interesting event as needs are from rough video track. The event can be all around elements as the relationship between the presentation of things in span break that happens before or after the other event. Order of occasion in diversion recordings in view of manual work and modified examination of visual components. Here modernization, for instance, camera or modifying process investigation, overall development appraisal, frontal range establishment withdrawal together with unmistakable article acknowledgment Wu et al., and the area of CC (close engraving) streams are made use of Babaguchi et al. (2002).

9. CONCLUSIONS

Content-based video recovery is careful to be an unpredictable mission. The fundamental intention at the back of this is the measure of intra-class divergence where the indistinguishable semantic idea happens under different conditions like light, appearance, and scene settings. For example, recordings involving a man riding a bike can have inconsistency as different sizes, appearances, and camera movements.

REFERENCES

1. Abinaya Sambat Kumar & Nirmala A 2015, 'A Survey on Multimodal Techniques in Visual Content Based Video Retrieval', International Journal of Advanced Research in Computer Science and Software Engineering, vol. 5, no. 1.
2. Archana V Potnurwar & Mohammad Atique 2014, 'Visual Attention Key Frame Extraction for Video Annotations', International Journal of Computer Science Engineering, vol. 3, no.1.
3. Azka Maqsood, Imran Touqir, Adil Masood Siddiqui, And Maham Haider, 'Wavelet Based Video Denoising using Probabilistic Models', Mehran University Research Journal of Engineering & Technology, p-ISSN: 0254-7821, e-ISSN: 2413-7219, Vol. 38, No. 1, 17-30, January 2019.
4. Chih-Chin Lai & Ying-Chuan Chen 2011, 'A User-Oriented Image Retrieval System Based on Interactive Genetic Algorithm', IEEE Trans on Instrumentation and Measurement, vol. 60, no. 10.
5. Deepali Bhawarathi & Shriniwas Gadage 2012, 'Enriching Feature Extraction for Cricket Video Event Detection', International Journal of Engineering Research and Technology (IJERT), vol. 1, no. 7.
6. Dyana A & Das S 2010, 'MST-CSS (Multi-Spectrum-Temporal Curvature Scale Space), a Novel Spatio-Temporal Representation for Content-Based Video Retrieval', IEEE Transactions on Circuits and Systems for Video Technology, vol. 20, no. 8, pp. 1080-1094.
7. Ganesh I Rathod & Dipali A Nikam 2014, 'Review on Event Retrieval in Soccer Video', International Journal of Computer Science and Information Technologies, vol. 5, no. 4, pp. 5601-5605.
8. Gijesh Varghese & Zhou Wang 2010, Video Denoising Based on a Spatiotemporal Gaussian Scale Mixture Model', IEEE transactions on circuits and systems for video technology, vol. 20, no. 7.
9. Haojin Yang & Meinel C 2014, 'Content Based Lecture Video Retrieval Using Speech and Video Text Information', IEEE Transactions on Learning Technologies, vol. 7, no. 2, pp. 142-154
10. Ionuț Mironica, Bogdan Ionescu, Jasper Uijlings & Nicu Sebe 2016, 'Fisher Kernel Temporal Variation-based Relevance Feedback for video retrieval', Journal of Computer Vision and Image Understanding, vol. 143, pp. 38-51.

11. Ijaz Ul Haq¹ , Khan Muhammad² , Tanveer Hussain¹ , Soonil Kwon² , Maleerat Sodani³ , Sung Wook Baik¹ and Mi Young Lee, 'Movie scene segmentation using object detection and set theory', *International Journal of Distributed Sensor Networks* 2019, Vol. 15(6) The Author(s) 2019.
12. Jaesik Choi, Ziyu Wang, Sang-Chul Lee & Won J. Jeon 2013, 'A spatio-temporal pyramid matching for video retrieval', *Journal of Computer Vision and Image Understanding*, vol. 117, no. 6, pp. 660-669.
13. Ja-Hwung Su, Yu-Ting Huang, Hsin-Ho Yeh & Vincent S Tseng 2010, 'Effective content-based video retrieval using pattern-indexing and matching techniques', *Journal of Expert Systems with Applications*, vol. 37, no. 7, pp. 5068-5085.
14. Jaimon Jacob , Sudeep Ilayidom , V.P. Devassia, 'Interactive Video Retrieval Using Semantic Level Features and relevant feedback Content Based Video Retrieval System Using Video Indexing', *International Journal of Computer Sciences and Engineering*, E-ISSN: 2347-2693, v, April 2019.
15. Jordi Pont-Tuset, Miquel A Farre & Aljoscha Smolic 2015, 'Semi-Automatic Video Object Segmentation by Advanced Manipulation of Segmentation Hierarchies', *International Workshop on Content-Based Multimedia Indexing*.
16. Khin Thandar Tint & Kyi Soe 2013, 'Key Frame Extraction for Video Summarization Using DWT Wavelet Statistics', *International Journal of Advanced Research in Computer Engineering and Technology (IJARCET)* vol. 2, no 5.
17. Lakshmi Priya GG & Domic S 2014, 'Shot based key frame extraction for ecological video indexing and retrieval', *Journal of Ecological Informatics*, vol. 23, pp. 107-117.
18. Liu GH, Li ZY, Zhang L & Xu Y 2011, Image retrieval based on microstructure descriptor, *Pattern Recognition*, vol. 44, pp. 2123-2133.
19. Liya Thomas & Syama 2014, 'Ontology Based Video Annotation and Retrieval System', *International Journal of Emerging Technology and Advanced Engineering*, vol. 4, no. 7.
20. Lu ZM & Shi Y 2013, 'Fast Video Shot Boundary Detection Based on SVD and Pattern Matching', *IEEE Transactions on Image Processing*, vol. 22, no. 12.
21. Luan H, Zheng Y, Wang M & Chua 2011, 'Vision Go: Towards video retrieval with joint exploration of human and computer', *Journal of Information Science*, vol. 181, no. 19, pp. 4197-4213.
22. Maheshkumar H Kolekar & Somnath Sengupta 2010, 'Semantic concept mining in cricket videos for automated highlight generation', *Multimedia Tools Appl*, vol. 47, pp. 545-579.
23. Mohsen Ramezani & Farzin Yaghmaee 2016, 'A novel video recommendation system based on efficient retrieval of human actions', *Journal of Statistical Mechanics and its Applications*.
24. Nagarajan G & Minu RI 2015, 'Fuzzy Ontology Based Multi-Modal Semantic Information Retrieval', *International Conference on Computer, Communication and Convergence*, vol. 48, pp. 101-106.
25. Nandhini S & Shenbagavalli A 2014, 'Voiced/Unvoiced Detection using Short Term Processing', *International Journal of Computer Applications (0975-8887)*.
26. Nishan Singh & Vijay Laxmi 2014, 'Audio Noise Reduction from Audio Signals and Speech Signals', *International Journal of Computer Science Trends and Technology*, vol. 2, no. 5.
27. Padmakala S & Anandha Mala GS 2010, 'Novel Video Object Segmentation Approach for Noisy Video Sequences towards Effective Video Retrieval', *International Journal of Computer Theory and Engineering*, vol. 2, no. 6, pp. 1793-8201.
28. Padmakala S, Anandha Mala GS & Shalini M 2011, 'An effective content based video retrieval utilizing texture, color and optimal key frame features', *International Conference on Image Information Processing (ICIIP)*.
29. Padmakala S & Anandha Mala GS 2012, 'A Technique to Content-Based Video Retrieval Utilizing Diverse Set of Features', *European Journal of Scientific Research*, ISSN 1450-216X, vol. 83, no. 4, pp. 558-575 .
30. Padmakala S, Muthuchelvi P & Anandha Mala GS 2014, 'IVRSC: An Interactive and Intelligent Video Retrieval System for Cricket Videos Using Multi-Features', *International Journal of Applied Engineering Research*, ISSN 0973-4562, vol. 9, no. 24, pp. 27457-27491.
31. Padmakala S & Anandha Mala GS 2018, 'Interactive Video Retrieval Using Semantic Level Features and relevant feedback', *International Arab Journal of Information Technology*, ISSN 2309-4524, vol. 13, no. 1.
32. Rafal Kapela, Aleksandra Świetlicka, Andrzej Rybarczyk, Krzysztof Kolanowski & Noel E. Connor 2015, 'Real-time event classification in field sport videos', *Journal of Signal Processing: Image Communication*, vol. 35, pp. 35-45.
33. Ramya S & Rangarajan 2011, 'Knowledge Based methods for Video Data Retrieval', *International Journal of Computer Science and Information Technology*, vol. 3, no. 5, pp. 469-481
34. Rooij O & Worring 2013, 'Active Bucket Categorization for High Recall Video Retrieval', *IEEE Transactions on Multimedia*, vol. 15, no. 4.
35. Salahuddin A, Naqvi A, Murtaza K & Akhtar J 2012, 'Content Based Video Retrieval Using Particle Swarm Optimization', *Frontiers of Information Technology (FIT)*, 2012 10th International Conference, pp. 79-83.
36. Shika Gupta & Mohd Suhel 2015, 'Speech Recognition using MFCC & VQ', *International Journal of Scientific Engineering And Technology Research*, vol. 04, no. 01, pp. 0058-0061.
37. Shweta Ghodeswar & Meshram BB 2010, 'Content Based Video Retrieval', *Proceeding of International Symposium on Computer Engineering and technology*, Mandi Gobindgarh, Punjab.

38. Simon Jones & Ling Shao 2013, 'Content-based retrieval of human actions from realistic video databases', *Journal of Information Sciences*, vol. 236, 1, pp. 56-65.
39. Sudhir S Kanade & Pradeep M Patil 2012, 'Lawn Tennis Video Summarization based on Audiovisual and Text Feature Analysis', *International Journal of Computer Applications*, vol. 42, no. 19.
40. Sun X, Zhao L & Zhang M . 2011, 'A Novel Shot Boundary Detection Method Based on Genetic Algorithm-Support Vector Machine', *Intelligent Human-Machine Systems and Cybernetics (IHMSC)*, 2011 International Conference, vol. 1, pp. 144-147.
41. T. Kim, M. OhHeo, S. Kyoung-WhaPark ,B. T. Zhang "GLAC-Net: GLobal Attention Cascading Networks for Multi-Image Cued Story Generation", arXiv:1805.10973v3, Feb 2019.
42. Vijayakumar V & Nedunchezian R 2012, 'Event detection in cricket video based on visual and acoustic features', *Journal of Global Research in Computer Science*, vol. 3, no. 8.
43. V.P. Devassia Hariharan. K, Arjun. S. V, Nivedha. S, Srithar. K, Thivaharan. S, 'Visual Content Based Video Indexing Using Key Frame Extraction' *International Research Journal of Engineering and Technology*, e-ISSN: 2395-0056, Volume: 06 Issue: 03 | Mar 2019.
44. Wattanarachothai W & Patanukhom K 2015, 'Key frame extraction for text based video retrieval using Maximally Stable Extremal Regions', *Industrial Networks and Intelligent Systems*, pp. 29-37.
45. Xu Zhang, Bao-Long Guo, Guiyue Zhang & Yunyi Yan 2011, 'An Image Retrieval Method Based on r/KPSO', *IEEE Second International Conference on Innovations in Bio-inspired Computing and Applications*, pp. 69-72, DOI 10.1109/IBICA.2011.22.
46. Xuemei Wang, Dengyin Zhang, Min Zhu, Yingtian Ji & Jin Wang 2015', 'Improved Image Denoising Based on 3D Collaborative Filtering', *International Journal of Signal Processing, Image Processing and Pattern Recognition*, vol. 8, no. 4, pp. 227-236.
47. Yanqiang Lei, Weiqi Luo, Yuangen Wang & Jiwu Huang 2012, 'Video Sequence Matching Based on the Invariance of Color Correlation', *IEEE transactions on circuits and systems for video technology*, vol. 22, no. 9.
48. Yipei Wang, Shourabh Rawat & Florian Metze 2014, 'Exploring audio semantic concepts for event-based video retrieval', *IEEE International Conference on Acoustics, Speech and Signal Processing*.
49. Zhe Ming Lu & Yong Shi 2013, 'Fast Video Shot Boundary Detection Based on SVD and Pattern Matching', *Image processing IEEE Transactions*, vol. 22, no. 12.
50. Zimian Li & Ming Zhu 2013, 'A Light-weight Relevance Feedback Solution for Large Scale Content-Based Video Retrieval', *IJCSI International Journal of Computer Science Issues*, vol. 10, no. 1, pp. 3.

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