

Paween Khoenkaw 2014: Image/Video Cropping and Indexing by Cinematography Knowledge. Doctor of Engineering (Computer Engineering), Major Field: Computer Engineering, Department of Computer Engineering. Thesis Advisor: Associate Professor Punpiti Piamsa-nga, D.Sc. 135 pages.

Because of high-bandwidth availability of networks, such as 3G and Wi-Fi, is essential for smart phones and computer tablets, applications of video broadcasting onto those devices become more important. Usually, sizes and aspect ratios of both contents and display screens are drastically unmatched. Scaling the contents to fit onto the display screen is not an appropriate solution because scaled objects are too small to see and it also produces inefficient “black bar” areas on display devices. Cropping only center area of the frame could lose some important information if it is located at far left or far right of the frame. Manual cropping is also very exhaustive. This paper presents a fully automatic algorithm for selecting the most appropriate areas of image and video show on heterogeneous displays.

We proposed to analyze cinematic features in video and use it for identifying important parts of each video frame or image. This information was used to crop the areas to fit its display screen. The well-known motion pictures and image dataset are used for performance evaluation. The experimental results clearly showed that audiences preferred results processed by our algorithm.

Cinematic features and methods for image and video cropping also used as a foundation for video indexing algorithm. The N-gram model is proposed to extract shot transition and used as a signature. This indexing algorithm yields high precision and fast detection time but low on recall. However, we also proposed an improved algorithm based on spectrogram. This algorithm gets high precision rate over all recall but requires more computation time.

Student's signature

Thesis Advisor's signature

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