IRCCyN IVC DIBR Images database

Summary

Overview

This database contains 96 still images and their associated subjective scores.

Three different multiview plus depth (MVD) sequences are considered in this database. The sequences are Book Arrival (1024x768, 16 cameras with 6.5cm spac-ing), Lovebird1 (1024x768, 12 cameras with 3.5 cm spacing) and Newspaper (1024x768, 9 cameras with 5 cm spacing). Seven DIBR algorithms processed the three sequences to generate, for each sequence, four new viewpoints.

These seven DIBR algorithms are labeled from A1 to A7. The test was conducted in an ITU conforming test environment. For the subjective assessments, the stimuli were displayed on a TVLogic LVM401W, and according to ITU-T BT.500. See the paper for more details.

From the generated views (96 video sequences in total), 96 still images are extracted. They are referred to as "key frames" in the papers above. However, the extraction is random : only one frame was selected out of each synthesized view viewpoint. The frame number is fixed for a given viewpoint. This database contains only the extracted still images and the video sequences will be available subsequently in a different database.

We provide 2 spreadsheets with the individual scores for ACR and pair comparison and the Mean Opinion Score (MOS) for each of the 96 images.

We used Absolute Category Rating (ACR) and pair comparison as test methodologies. A text file describes the exact conditions in which the videos were evaluated.

Source description

SRC	Source name	Preview	Description	Frame number and point of view
01	Book Arrival		Name : Book Arrival Description : A man in an office standing up to welcome another man. Author : Heinrich-Hertz-Institut.	Left point of view : frame 54 of the view 8 Right point of view : frame 60 of the view 10 Target center point of view : view 9
02	Lovebird1		Name : Lovebird1 Description : A woman and a man are walking in front of a temple. Author :Electronics and TelecommunicationsResearch Institute (ETRI).	Left point of view : frame 104 of the view 6 Right point of view : frame 112 of the view 8 Target center point of view : view 7
03	Newspaper		Name : Newspaper Description : A man and a girl reading the newspaper around a table when a man coming behind them. Author : Gwangju Institute of Science and Technology (GIST).	Left point of view : frame 136 of the view 4 Right point of view : frame 104 of the view 6 Target center point of view : view 5

Hypothetical Reference Circuits (HRC) or versions

The Processed Video Sequences (PVS) were created using the following Hypothetical Reference Circuits (HRC). You can find details of the algorithms in the associated publication.

From the left point of view of each source content, 2 images are generated using the algorithm of the table. The first one is the center point of view and the second one is the right point of view. From the right point of view, the center point of view is generated and the left one.

For each algorithm and for each source content, there are 4 images.

Algorithm name	Algorithm number	Associated paper
Fehn cropped	A1	A. Telea, "An image inpainting technique based on the fast marching method,"Journal of Graphics, GPU, and Game Tools, vol. 9, no. 1, pp. 23–34, 2004
Fehn interpolated	A2	A. Telea, "An image inpainting technique based on the fast marching method,"Journal of Graphics, GPU, and Game Tools, vol. 9, no. 1, pp. 23–34, 2004
Holes	A7	
ICIP TMM	A6	M. Koppel, P. Ndjiki-Nya, D. Doshkov, H. Lakshman, P. Merkle,K. Muller, and T. Wiegand, "Temporally consistent handling of dis-occlusions with texture synthesis for depth-image-based rendering," in Proc. of IEEE ICIP, Hong Kong, China, Sep. 2010
ICME	A5	P. Ndjiki-Nya, M. Koppel, D. Doshkov, H. Lakshman, P. Merkle,K. Muller, and T. Wiegand, "Depth image based rendering with ad-vanced texture synthesis," in Proc. of IEEE ICME, Singapore, Jul. 2010
MPEG_VSRS	A3	Y. Mori, N. Fukushima, T. Yendo, T. Fujii, and M. Tanimoto, "View generation with 3D warping using depth information for FTV," Elsevier Signal Processing: Image Communication, vol. 24, pp. 65–72, 2009
Mueller	A4	K. Muller, A. Smolic, K. Dix, P. Merkle, P. Kauff, and T. Wiegand, "View synthesis for advanced 3D video systems,"EURASIP Journal on Image and Video Processing, 2008, Article ID 438148
Original		

So, for each image content, there are 8 versions x 4 images = 32 images.

Subjective experiment information

Global description

Features	Value	
Images		
Images resolution	1024x768 pixels	
Number of videos	96	
Subjective test		
Observer distance	4H (H is the height of the Full HD display)	
Environment	ITU-R BT.500-11	
Duration	20 minutes	40 minutes
Background luminance	25 cd/m²	
Methodology	ACR	Pair comparison
Pre screening	Snellen, Ishihara	
Post screening (rejection method)	VQEG multimedia	No rejection
Observers		
Number of observers	43 naives (0 rejected)	43 naives
Display		
Display model	LCD TvLogic LVM401	
Display resolution	Full HD (1920x1080 pixels)	
Display luminance Max	180 cd/m²	
Display mode	progressive	

Provided data

All provided data are on our FTP server at

ftp://ftp.ivc.polytech.univ-nantes.fr/IRCCyN_IVC_DIBR_Images/

Images
On the FTP server, we provide the images in the directory "Images". These videos are PNG files.

Subjective scores
The subjective scores of ACR and pair comparison subjective experiment are provided.

An Excel file is provided for each of the methodologies.

In the ACR file, an image is associated to a line and an observer to a column. You have access to all individual vote from each observer to each image. The last column is the Mean Opinion Score (MOS).

In the pair comparison file, the first sheet, explain the data organization as follow :

In the "Individual_PC_Scores" sheet, there are the results for each observer and each image.
The observers see a pair only one time. The results in the matrix is "1" if the line algorithm is prefered to the column algorithm. "0" if the column algorithm is prefered to the line algorithm.

In the "Sum_Matrix" sheet, the individual scores are sum across observers for each image. Higher the number is, higher the column algorithm is prefered to the line algorithm.
You can see the sum of the values of pair comparison between the algorithms i and j and between j and i is always 43. There are 43 observers for this experiment and all observers see all pairs.

In the "TM_Results" sheet, there are the results of Thurstone Mosteller analysis.
These results were computed with the implementation of "The law of comparative judgment : Theory and implementation by R. E. Vasquez-Espinosa and Richard W. Conners" in Matlab

Related publications

Please, cite the following paper in your publications if you use this database in your work :

Bosc, Emilie and Pépion, Romuald and Le Callet, Patrick and Koppel, Martin and Ndjiki-Nya, Patrick and Pressigout, Muriel and Morin, Luce,"Towards a New Quality Metric for 3-D Synthesized View Assessment", *IEEE Journal on Selected Topics in Signal Processing*, 2011, pp.J-STSP-ETVC-00048-2011

More information
If you want more information or want a collaboration about this database, you can contact use at :

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