

COMPUTER SCIENCE COLLOQUIUM

Department of Computer Science
City University of Hong Kong

Digital Inpainting

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Date :

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Time :

10:30am - 11:30am (Refreshment will be served at 10:15am)

Venue :

CS Seminar Room, Rm Y6405, 6th Floor Yellow Zone, Academic Building,
City University of Hong Kong, Tat Chee Avenue, Kowloon Tong.

Abstract

Recent interesting issues in video inpainting are defect removal and object removal. We take one more step to replace the removed objects in a video sequence by implanting objects from another video. Before implant, we improve an exemplar-based image inpainting algorithm by using a new patch matching strategy which incorporates edge properties. The data term used in a priority computation of candidate patches is also redefined. We take varieties of temporal continuities of foreground and background into consideration. A motion compensated inpainting procedure is then proposed. However, to remove objects from a video, the resulting video may have ghost shadows even each individual frame is inpainted properly. We use motion estimation algorithm to separate objects and backgrounds into several layers. Objects in separated layers are inpainted from back to front layers, with a consideration of the temporal continuity of motion segments among different frames. The inpainted video backgrounds are visually pleasant with smooth transitions. A simple tracking algorithm is then used to produce a foreground video, which is implanted into the inpainted background video. Our results are available at <http://www.mine.tku.edu.tw/inpainting>.

Biography

Dr. Shih is a Professor of the Department of Computer Science and Information Engineering at Tamkang University, Taiwan. He is a member of ACM. As a senior member of IEEE, Dr. Shih joins the Educational Activities Board of the Computer Society. His current research interests include Multimedia Computing and Distance Learning. He was a faculty of the Computer Engineering Department at Tamkang University in 1986. In 1993 and 1994, he was a part time faculty of the Computer Engineering Department at Santa Clara University. He was also a visiting professor at the University of Aizu, Japan in summer 1999, a visiting researcher at the Academia Sinica, Taiwan in summer 2001, and an adjunct faculty member of Xidian University, China. Dr. Shih has edited many books and published over 380 papers and book chapters, as well as participated in many international academic activities, including the organization of more than 50 international conferences and several special issues of international journals. He is the founder and co-editor-in-chief of the International Journal of Distance Education Technologies, published by Idea Group Publishing, USA. Dr. Shih is the associate editor of ACM Transactions on Internet Technology. He was also the associate editor of IEEE Transactions on Multimedia. Dr. Shih has received many research awards, including research awards from National Science Council of Taiwan, IAS research award of Germany, and several best paper awards from international conferences. He also received many funded research grants from both domestic and international agencies. Dr. Shih has been invited to give more than 15 keynote speeches and plenary talks in international conferences, tutorials in IEEE ICME 2001/2006 and ACM Multimedia 2002, and talks at international conferences and overseas research organizations. Publications, demonstrations and contact address of Dr. Shih can be retrieved from <http://www.mine.tku.edu.tw/chinese/teacher/tshih.htm>.

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