

Fast and realistic 2D facial animation based on image warping

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Abstract: Facial animation has contributed to many fields such as movies, computer games, education and e-commerce. Facial animation is obtained in two ways: pre-calculated animation and real-time animation. Pre-calculated animation often produces very realistic results with very powerful computer systems and is often used for animated movies. Real-time animation often produces lower quality results due to the real-time requirements and is often used for interactive applications. We propose in this paper a real-time animation method which operates on a 2D image of face. We simulate the effect of facial muscles with image warping techniques. Our method can produce realistic facial expressions and can be easily deployed on not very strong environments such as web pages, mobile phones and PDAs. ?? 2009 IEEE.

Author Keywords: Facial animation; Image warping

Index Keywords: 2D facial animation; 2D images; Computer game; E-Commerce; Facial animation; Facial Expressions; Facial muscles; Image warping; Interactive applications; Real time requirement; Real-time animations; Web page; Knowledge engineering; Systems engineering; Telecommunication equipment; Weaving; Animation

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References:

1. Blanz, V., Basso, C., Poggio, T., Vetter, T., Reanimating faces in images and video (2003) Proceedings of EuroGraphics 2003, , Granada, Spain
2. Bregler, C., Covell, M., Slaney, M., Video rewrite: Driving visual speech with audio (1997) Computer Graphics Proc. SIGGRAPH'97
3. Bui, T.D., Heylen, D., Poel, M., Nijholt, A., Generation of Facial Expressions from Emotion Using a Fuzzy Rule-Based System (2001) LECTURE NOTES IN COMPUTER SCIENCE, (2256), pp. 83-94. , AI 2001: Advances in Artificial Intelligence
4. Bui, T.D., Heylen, D., Nijholt, A., Improvements on a simple muscle-based 3d face for realistic facial expressions (2003) 16th International Conference on Computer Animation and Social Agents (CASA-2003), , IEEE Computer Society
5. Ezzat, T., Geiger, G., Poggio, T., Trainable video realistic speech animation (2002) Comp. Graph. Proc. SIG-GRAPH'02
6. Lanh, N.T., H?a, N.T., (2007) Ti?ng Vi?t (Ng? ?m v? Phong c?ch ho??c), , Nh? xu?t b?n dai hoc Su Pham
7. Lee, Y., Terzopoulos, D., Waters, K., Realistic face modeling for animation (1995) SIGGRAPH 95 Conference Proceedings, Annual Conference Series, pp. 55-62. , In Cook, R., editor. ACM SIGGRAPH, Addison Wesley
8. Liu, Z., Shan, Y., Zhang, Z., Expressive expression mapping with ratio images (2001) SIGGRAPH '01: Proc. of the 28th annual conference on Computer graphics and interactive techniques
9. Parke, F.I., (1974) A Parametric Model for Human Faces, , PhD thesis, University of Utah
10. Pasquariello, S., Pelachaud, C., Greta: A simple facial animation engine (2001) 6th Online World Conference on Soft Computing in Industrial Applications, Session on Soft Computing for Intelligent 3D Agents
11. Song, M., Dong, Z., Theobalt, C., Wang, H., Liu, Z., Seidel, H., A generic framework for efficient 2D and 3D facial expression analogy (2007) IEEE Transactions on Multimedia
12. Wolberg, G., (1992) Digital Image Warping, , IEEE Computer Society Press