

{tag}

{/tag}

IJCA Proceedings on Emerging Applications of
Electronics System, Signal Processing and Computing Technologies

© 2015 by IJCA Journal

NCESC 2015 - Number 1

Year of Publication: 2015

Authors:

P. J. Kulkarni

U. B. Hatwar

{bibtex}ncesc7323.bib{/bibtex}

Abstract

This paper presents representation techniques as the image can be represented in Cubic B-splines that are used to represent the curvilinear features of an image. The algorithm is devised to convert a raster image into vector image. The algorithm first detects the curvilinear features of the image, then based on the curvilinear edges and feature attributes it constructs a triangulation, and finally iteratively optimizes the vertex color attributes and updates the triangulation. The results of the used techniques are presented. Compared with existing vector

representation technique this method provides advantages for various image operations. This method is useful to vectorize the images of fonts, logos, blueprints and maps.

Refer

ences

- W. A. Barrett and A. S. Cheney, "Object-based image editing," *ACM Trans. Graph.*, vol. 21, no. 3, pp. 777–784, Jul. 2002.
- M. Froumentin, F. Labrosse, and P. Willis, "A vector-based representation for image warping," *Comput. Graph. Forum*, vol. 19, no. 3, pp. 419–425, Sep. 2000.
- S. Swaminarayan and L. Prasad, "Rapid automated polygonal image decomposition," in *Proc. 35th Appl. Image Pattern Recognit. Workshop*, Oct. 2006, p. 28.
- G. Lecot and B. Lévy, "ARDECO: Automatic region detection and conversion," in *Proc. Eurograph. Symp. Rendering*, 2006.
- Y.-K. Lai, S.-M. Hu, and R. R. Martin, "Automatic and topology preserving gradient mesh generation for image vectorization," *ACM Trans. Graph.*, vol. 28, no. 3, p. 85, Aug. 2009.
- S. Swaminarayan and L. Prasad, "Rapid automated polygonal image decomposition," in *Proc. 35th Appl. Image Pattern Recognit. Workshop*, Oct. 2006, p. 28.
- M. Froumentin, F. Labrosse, and P. Willis, "A vector-based representation for image warping," *Comput. Graph. Forum*, vol. 19, no. 3, pp. 419–425, Sep. 2000.
- G. Lecot and B. Lévy, "ARDECO: Automatic region detection and conversion," in *Proc. Eurograph. Symp. Rendering*, 2006.
- T. Xia, B. Liao, and Y. Yu, "Patch-based image vectorization with automatic curvilinear feature alignment," *ACM Trans. Graph.*, vol. 28, no. 5, p. 115, Dec. 2009.
- D. Hale, "Atomic images—a method for meshing digital images," in *Proc. 10th Int. Meshing Roundtable*, 2001, pp. 185–196.
- J. G. Brankov, Y. Yang, and M. N. Wernick, "Tomography image reconstruction using content-adaptive mesh modeling," in *Proc. Int. Conf. Image Process.*, 2001, vol. 1, pp. 690–693.
- Y. Wang and O. Lee, "Active mesh—a feature seeking and tracking image sequence representation scheme," *IEEE Trans. Image Process.*, vol. 3, no. 5, pp. 610–624, Sep. 1994.
- Y. Altunbasak and A. M. Tekalp, "Closed-form connectivity-preserving solutions for motion compensation using 2-D meshes," *IEEE Trans. Image Process.*, vol. 6, no. 9, pp. 1255–1269, Sep. 1997.
- S. A. Coleman, B. W. Scotney, and M. G. Herron, "Image feature detection on content-based meshes," in *Proc. Int. Conf. Image Process.*, 2002, vol. 1, pp. 1-844–1-847.
- F. Davoine, M. Antonini, J.-M. Chassery, and M. Barlaud, "Fractal image compression based on Delaunay triangulation and vector quantization," *IEEE Trans. Image Process.*, vol. 5, no. 2, pp. 338–346, Feb. 1996.
- Y. Wang, O. Lee, and A. Vetro, "Use of two-dimensional deformable mesh

structures for video coding. II. The analysis problem and a region-based coder employing an active mesh representation," IEEE Trans. Circuits Syst. Video Technol. , vol. 6, no. 6, pp. 647–659, Dec. 1996.

- D. Su and P. Willis, "Image interpolation by pixel-level data-dependent triangulation," Comput. Graph. Forum, vol. 23, no. 2, pp. 189–201, Jul. 2004.

- B. Price and W. Barrett, "Object-based vectorization for interactive image editing," in Proc. Pacific Graph. , Sep. 2006, pp. 661–670.

- Hailing Zhou, Jianmin Zheng, and Lei Wei, "Representing Images Using Curvilinear Feature Driven Subdivision Surfaces" IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 23, NO. 8, AUGUST 2014.

- E. Cohen, T. Tyche, and R. Riesenfeld, "Discrete B-splines and subdivision techniques in computer-aided geometric design and computer graphics," Comput. Graph. Image Process. , vol. 14, no. 2, pp. 87–111, Oct. 1980.

- M. Maire, P. Arbelaez, C. Fowlkes, and J. Malik, "Using contours to detect and localize junctions in natural images," in Proc. IEEE Conf. CVPR, Jun. 2008, pp. 1–8.

Computer Science

Index Terms

Image Processing

Keywords

Image Processing Subdivision Surfaces Curvilinear Features Mesh Generation
Graphics Primitives.