

Hüseyin Tek

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Education

- Ph.D. Brown University, RI** July 1999
Electrical Engineering
Thesis Title “The role of symmetry maps in representing objects in images.”
Thesis Advisor: Benjamin B. Kimia
- M.S. Brown University, RI** June 1994
Electrical Engineering
- B.S. Istanbul Technical University, Istanbul, Turkey** June 1989
Electronics and Communications Engineering

Experience

- Visiting Research Associate**, Division of Engineering, Brown University, July 1999-present
- Developed formal mathematical proof for the exactness of the symmetry detection algorithm, developed during my Ph.D. program.
 - Developed and optimized the symmetry transforms for perceptual organization.
- Research Assistant**, Division of Engineering, Brown University, June 1994-June 1999
- Shape representation for object recognition and image indexing. Developed analytically exact and computationally near optimal algorithm for detecting symmetry representation of curve segments and shapes.
 - Image segmentation. Designed non-linear smoothing algorithms for shapes and real images. Developed algorithms and software for image segmentation, now in use by medical/graduate students in segmenting medical organs.
 - Collaborated with medical students and medical doctors from Rhode Island Hospital. Medical and graduate students used my segmentation algorithm for segmenting primary brain tumors and carpal bones.
 - Served as a mentor for undergraduate/graduate students. Guided several students in computer vision and engineering related projects.
 - Supplementary teaching assistant for numerical solutions for differential equations (two semesters).
 - Reviewed scientific papers for several journals and conferences: PAMI, IJCV, CVPR, ICCV, IWVF, ISMM, *etc.*
 - Assisted in the organization of the international workshop on Non-linear Diffusion, Providence, (June 1995).
 - Assisted in writing proposals for grants from government agencies, *e.g.*, NSF, DARPA.

Skills

- Computer Skills:** Extensive knowledge of Unix, C, LISP, Matlab, Emacs, Latex.
Knowledge of Windows, Cray, C++, Python, IRIS Explorer, Word.
- Language Skills:** Fluent in Turkish, and English. Several years of high school level German.
- Interests:** Soccer, tennis, biking, and independent films.

Publications

- [1] H. Tek and B. B. Kimia. Symmetry maps of free-form curve segments via wave propagation. In *Proceedings of the Fifth International Conference on Computer Vision*, pages 362–369, Kerkyra, Greece, September 20-25 1999. IEEE Computer Society Press.
- [2] H. Tek and B. B. Kimia. Symmetry map and symmetry transforms. In *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pages 471–477, Fort Collins, Colorado, USA, June 23-25 1999. IEEE Computer Society Press.
- [3] H. Tek and B. B. Kimia. Curve evolution, wave propagation, and mathematical morphology. In *Fourth International Symposium on Mathematical Morphology (ISMM'98)*, pages 115–126, June 1998.
- [4] D. Sharvit, J. Chan, H. Tek, and B. B. Kimia. Symmetry-based indexing of image databases. *Journal of Visual Communication and Image Representation*, 9(4):366–380, December 1998.
- [5] T. B. Sebastian, H. Tek, S. W. Wolfe, J. J. Crisco, and B. K. Kimia. Segmentation of Carpal Bones from 3D CT images using Skeletally Coupled Deformable Models. In *International Conference on Medical Image Computing and Computer Assisted Interventions*, pages 1184–1194, Boston, MA, October 1998.
H. Tek and B. B. Kimia. Volumetric segmentation of medical images by three-dimensional bubbles. *Computer Vision and Image Understanding*, 64(2):246–258, February 1997.
- [6] H. Tek, P. Stoll, and B. B. Kimia. Shocks from images: Propagation of orientation elements. In *Proceedings of the Conference on Computer Vision and Pattern Recognition*, 1997.
- [7] H. Tek, F. Leymarie, and B. B. Kimia. Multiple generation shock detection and labeling using CEDT. In *Proceedings of the International Workshop on Visual Form*, Capri, Italy, May 1997. World Scientific.
- [8] M. Jayaraman, B. Kimia, H. Tek, G. Tung, and J. Rogg. Semi-automatic image segmentation of primary brain tumors based on deformable bubbles. In *Proceedings of the Radiological Society of North America*, November 1997.
- [9] M. Jayaraman, B. Kimia, H. Tek, G. Tung, and J. Rogg. Semi-automatic image segmentation of primary brain tumors based on deformable bubbles. In *Brown Brain Research*, April 1997.
- [10] B. B. Kimia, J. Chan, D. Bertrand, S. Coe, Z. Roadhouse, and H. Tek. A shock-based approach for indexing of image databases using shape. In *Proceedings of the SPIE's Multimedia Storage and Archiving Systems II*, volume 3229, pages 288–302, Dallas, Texas, November 1997.
- [11] T. B. Sebastian, H. Tek, S. W. Wolfe, J. J. Crisco, and B. K. Kimia. Segmentation of Carpal Bones from 3D CT images using Skeletally Coupled Deformable Models. In *International Conference on Medical Image Computing and Computer Assisted Interventions*, pages 1184–1194, Boston, MA, October 1998.
- [12] H. Tek and B. B. Kimia. Automatic volumetric segmentation of three-dimensional medical images. In *Proceedings of the Computer Assisted Radiology, 9th International Symposium and Exhibition*, Berlin, Germany, June 21-24 1995. Society for Computer Applications in Radiology.
- [13] H. Tek and B. B. Kimia. Image segmentation by reaction-diffusion bubbles. In *Proceedings of the Fifth International Conference on Computer Vision*, pages 156–162, Boston, Massachusetts, June 1995. IEEE Computer Society Press.
- [14] H. Tek and B. B. Kimia. Shock-based reaction-diffusion bubbles for image segmentation. In *Proceedings of the International Conference on Computer Vision, Virtual Reality and Robotics in Medicine*, Nice, France, April 1995. Springer-Verlag.
- [15] H. Tek and B. B. Kimia. Volumetric segmentation of medical images by three-dimensional bubbles. In *Proceedings of the IEEE Workshop on Physics-based Modelling in Computer Vision*, pages 9–16, Boston, Massachusetts, June 1995. IEEE Computer Society.
- [16] H. Tek and B. B. Kimia. A discrete wave propagation method for the exact recovery of bisectors as shocks. *Computer Aided Geometric Design*, pages To be Submitted, February, 2000.
- [17] H. Tek and B. B. Kimia. Symmetry map and symmetry transforms. *IEEE Trans. Pattern Analysis and Machine Intelligence*, pages To be Submitted, January, 2000.
- [18] H. Tek and B. B. Kimia. Symmetry maps of free-form curve segments via wave propagation. *IEEE Trans. Pattern Analysis and Machine Intelligence*, pages To be Submitted, January, 2000.