Curriculum Vitae - James C. Tilton

Current Position

Computer Engineer, Computational & Information Sciences and Technology Office, Mail Code 606.3, NASA Goddard Space Flight Center, Greenbelt, MD USA 20771 (in equivalent positions since January 1985).

Education

Ph.D. Electrical Engineering, Purdue University, West Lafayette, IN, 1981.
MS Optical Sciences, University of Arizona, Tucson, AZ, 1978.
MEE (Electrical Engineering), Rice University, Houston, TX, 1976.
BA Electrical Engineering, Environmental Science & Engineering, and Anthropology (cum laude), Rice University, Houston, TX, 1976.

Major Responsibilities

Supports NASA project needs in the areas of image analysis, including, but not limited to, image segmentation, and participates in the initiation of work in the development of new technologies in the extraction of information from image data. Developed and maintains the Hierarchical Segmentation (HSeg) Software Suite.

Previous Positions

1983-85: Senior Scientist, Science Applications Research, Riverdale, MD
1982-83: Senior Engineer, Computer Sciences Corporation, Silver Spring, MD
1982-82: Visiting Professor, School of Electrical Eng., Purdue Univ., W. Lafayette, IN
1981-82: Post Doctoral Research Associate, LARS, Purdue Univ., W. Lafayette, IN

Selected Honors and Awards

2012 Lloyd V. Berkner Award – American Astronautical Society – "in recognition of … commercial utilization of space technology…"
2011 R&D 100 Award for Bartron Medical Imaging's MED-SEG™ product using NASA GSFC's Recursive Hierarchical Segmentation (RHSeg) software.
2006 James Kerley Award for Achievements in Technology Transfer
2005 Excellence in Information Science and Technology Award from NASA GSFC

Professional Specialties

Image Analysis, Image Segmentation, Pattern Recognition and Image Analysis Applications to Remote Sensing, Massively Parallel Computation

Membership in Academies, Professional Societies, and Editorships

Senior Member IEEE: Geoscience and Remote Sensing Society
Member Phi Beta Kappa, Tau Beta Pi and Sigma Xi honorary societies

1996-present: Associate Editor, IEEE Transactions on Geoscience and Remote Sensing
2002-2006: Member of the editorial board of the *Pattern Recognition* journal.
1992-1996: Administrative Committee, IEEE Geoscience and Remote Sensing Society

Served as a guest editor for the *Special Issue on Pattern Recognition in Remote Sensing*: D. A. Clausi, S. Aksoy, and J. C. Tilton; *IEEE Transactions on Geoscience and Remote Sensing*, Volume 45, Issue 12, Dec 2007.

Served as a guest editor for the *Special Issue on Advances in Techniques for Analysis of Remotely Sensed Data*: J. A. Richards, M. M. Crawford, J. P. Kerkes, S. B. Serpico, and J. C. Tilton; *IEEE Transactions on Geoscience and Remote Sensing*, Volume 43, Issue 3, Mar 2005.

Served as a guest editor for the *Special Issue on Analysis of Multitemporal Remote Sensing Images*: L. Bruzzone, P. C. Smits, and J. C. Tilton; *IEEE Transactions on Geoscience and Remote Sensing*, Volume 41, Issue 11, Nov 2003.

Current Projects

Co-I with PI Eric Brown de Colstoun, NASA GSFC for the project "Using Landsat Global Land Survey Data to Measure and Monitor Worldwide Urbanization," funded by NASA's Land Cover / Land Use Change program. Period: Apr. 1, 2011 through Mar. 31, 2014. Commitment: 3.0 person months/year.

Co-I with PI Melba Crawford, Purdue University for the project "Advance Active Learning Algorithms for Robust Multi-Sensor Data Analysis," funded by NASA's Applied Information Systems Technology program. Period: Aug. 1, 2012 through Jul. 31, 2015. Commitment: 2.4 person months/year.

Co-I with PI Prasad S. Thenkabail, USGS, Flagstaff, AZ, for the project "Global Cropland Area Database (GCAD30) through Landsat and MODIS Data Fusion for the Years 2010 and 1990 and Its Dynamics Over Four Decades using AVHRR and MODIS," funded by NASA's MEASURES program. Period: Jan. 1, 2013 through Dec. 31, 2017. Commitment: 2.4 person months/year.

Selected Recent Publications

Mathieu Fauvel, Yuliya Tarabalka, Jon Atli Benediktsson, Jocelyn Chanussot and James C. Tilton, "Advances in Spectral-Spatial Classification of Hyperspectral Images," *Proceedings of the IEEE*, Vol. 101, No. 3, March 2013, pp. 652-675.

James C. Tilton, Yuliya Tarabalka, Paul M. Montesano and Emanuel Gofman, "Best Merge Region Growing Segmentation with Integrated Non-Adjacent Region Object Aggregation," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 50, No. 11, Nov. 2012, pp. 4454-4467.

Yuliya Tarabalka, James C. Tilton, Jon Atli Benediktsson, and Jocelyn Chanussot, "A Marker-Based Approach for the Automated Selection of a Single Segmentation From a Hierarchical Set of Image Segmentations," *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, Vol. 5, No. 1, February 2012.

Y. Tarabalka, J. A. Benediktsson, Jocelyn Chanussot and J. C. Tilton, "Multiple Spectral-Spatial Classification Approach for Hyperspectral Data," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 48, No.11, Nov. 2010, pp. 4122-4132.

James C. Tilton, "Parallel Implementation of the Recursive Approximation of an Unsupervised Hierarchical Segmentation Algorithm," Chapter 5 of the book *High Performance Computing in Remote Sensing*, C.-I. Chang and A. J. Plaza, editors, CRC Press, pp. 97-107, 2007.

James C. Tilton, William T. Lawrence and Antonio J. Plaza, "Utilizing Hierarchical Segmentation to Generate Water and Snow Masks to Facilitate Monitoring Change with Remotely Sensed Image Data," *GIScience & Remote Sensing*, Vol.43, No. 1, 2006, pp 39-66.

Selim Aksoy, Krzysztof Koperski, Carsten Tusk, Giovanni Marchisio and James C. Tilton, "Learning Bayesian Classifiers for Scene Classification with a Visual Grammar," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 43, Issue 3, Mar 2005, Pages 581-589.