

# CURRICULUM VITAE

## JAMES CHRISTOPHER McGLONE

### I. EDUCATION

- Purdue University, Ph.D., School of Civil Engineering, December, 1980.  
Dissertation topic: “Photogrammetric Analysis of Aircraft Multispectral Scanner Data,” advisor, Dr. Edward M. Mikhail.
- Purdue University, MS in Civil Engineering (Photogrammetry), December, 1977.
- University of Kentucky, BS in Civil Engineering, August, 1974.  
In the Honors Program.
- Additional coursework
  - New York University, 1990-91.  
Graduate Computer Science courses; Image and Signal Processing, Connectionist Systems
  - University of Texas at Austin, Spring, 1986.  
15 hours toward MS in Electrical and Computer Engineering (courses included Artificial Intelligence, Computer Vision, Vision in Man and Machine, Expert Systems, and Learning Machines and Cybernetic Systems)
  - University of Texas at San Antonio, 1985.  
Courses in Cognitive Science and Programming Languages

### II. EMPLOYMENT

August 2012---present  
Adjunct faculty member  
Department of Geography and Geoinformation Science,  
George Mason University 2012—2016.

- Teaching graduate courses in Digital Terrain Modeling (GGS658) and Photogrammetry (GGS562)

April 2005—October 2012 SAIC  
October 2012—January 2015 Leidos, Inc  
Photogrammetrist  
6909 Metro Park Dr.  
Alexandria, VA 22310

- Member of Leidos Technical Fellows Council
- Responsibilities include development and evaluation of technology for mapping from imagery, lidar, and other sensors
- Supported programs for agencies including NGA, DHS, AGC, and special-access customers.

July 1996—April 2005

Senior Systems Scientist (Research faculty)

April 1992—June 1996

Systems Scientist (Research faculty)

Digital Mapping Laboratory

School of Computer Science

Carnegie Mellon University

Pittsburgh, PA 15213

- Principal or co-principal investigator on several research projects.
  - Identified research opportunities and coordinated proposals.
  - Researched the use of single-image perspective geometry for building hypothesis generation, evaluation, and measurement.
  - Investigated the use of scene geometric information between multiple images to evaluate object hypotheses.
  - Implemented an object-oriented photogrammetric software package, to allow the use of multiple sensor geometries, with fully-integrated rigorous geometric constraints. Integrated this package into new and existing computer vision systems for automated cartographic feature extraction.
  - Geometric modeling of non-frame sensors such as airborne multispectral scanners and linear pushbroom sensors.
  - Interactions with other research groups concerning camera models, error modeling, and interchange of results.
  - Responsible for acquisition, evaluation, and integration of commercial feature extraction packages, including SocetSet, LAMPS-2, and ERDAS Imagine.
  - Responsible for acquiring, processing, and installing several large imagery test data sets, including HYDICE hyperspectral Ft. Hood data set.
- October 1997—January 2005  
Co-founder, treasurer  
TerraSim, Inc.  
One Gateway Center, Suite 2050  
420 Ft. Duquesne Blvd.  
Pittsburgh, PA, 15222

<http://www.terrasim.com>

- Implemented cartographic data processing algorithms for inclusion in TerraTools®, a commercial system for automated construction of visual simulation databases and geospatial visualizations, including coordinate/datum transformation and DEM fusion packages.
  - Acquired and processed cartographic data for simulation database construction.
  - Identified research opportunities and wrote proposals.
  - Accounting and financial management.
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- July 1986—April 1992  
Senior Consulting Engineer  
Schlumberger Fairchild Weston/Loral Fairchild Systems  
300 Robbins Lane, Syosset, NY 11791
    - Acting Manager of the Advanced Development Group, with a staff of five software and computer vision people.
    - Developed an algorithm using active contour models (“snakes”) for automated image-to-map registration.
    - Designed and implemented an object-oriented photogrammetric toolkit which allowed the exploitation of imagery from sensors with different geometries, e.g., frame, strip or panoramic.
    - Initiated and managed the “Ground Station of the Future” project, an advanced reconnaissance image exploitation station which began as an IR&D project and was then transitioned into a deliverable product for two different programs.
    - Developed mathematical models and software for sensor performance prediction.
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- October 1980—December 1985  
Director of Photogrammetry  
H. Dell Foster Associates  
2400 Freedom Drive  
San Antonio, TX 78217
    - In charge of photogrammetric and image processing algorithm design for the Vision Metrology System, an automated machine vision system providing three-dimensional measurements over a large working volume.
    - Wrote the mathematics and software for the MACO 35/70, an analytical stereoplotter designed to make precise three-dimensional measurements using photographs from 35 or 70 mm amateur cameras.
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- September 1976—August 1980  
Research and teaching assistant, graduate instructor

Purdue University  
West Lafayette, IN 47907

- Taught and assisted in graduate courses in photogrammetry, data adjustment, computer programming, and matrix algebra.
- 1977—1979  
Mathematical consultant  
Keuffel & Esser Co.  
Morristown, NJ
  - Mathematical design for the DSS-300 analytical stereoplotter.
- September 1974—August 1976  
Assistant civil engineer  
Kentucky Dept. of Highways  
Frankfort, KY
  - Instrument man and assistant survey crew leader.

### III. PUBLICATION LIST

#### BOOKS

Editor, *Manual of Photogrammetry, 6th Edition*, American Society for Photogrammetry and Remote Sensing, 2013.

Editor, *Manual of Photogrammetry, 5th Edition*, American Society for Photogrammetry and Remote Sensing, 2004.

*Introduction to Modern Photogrammetry*, (with Edward M. Mikhail and James Bethel), John Wiley and Sons, 2001.

#### BOOK CHAPTERS

“Photogrammetric Products,” *Encyclopedia of GIS*, Springer, 2007.

“Photogrammetry,” in D. Maune, ed., *Digital Elevation Model Technologies and Applications: the DEM Users Manual, Second Edition*, American Society for Photogrammetry and Remote Sensing, 2007.

“Photogrammetry and 19<sup>th</sup> Century Photography,” *Encyclopedia of Nineteenth-Century Photography*, Routledge, Taylor, and Francis, 2007.

Chris McGlone, “Sensor modeling in image registration,” in C. Greve, ed., *Digital Photogrammetry: An Addendum to the Manual of Photogrammetry*, American Society for Photogrammetry and Remote Sensing, 1996.

David M. McKeown, Chris McGlone, et al., "Automatic Cartographic Feature Extraction Using Photogrammetric Principles," in C. Greve, ed., *Digital Photogrammetry: An Addendum to the Manual of Photogrammetry*, American Society for Photogrammetry and Remote Sensing, 1996.

Chris McGlone, "Analytic Data Reduction Schemes in Non-Topographic Photogrammetry," in H. Karara, ed., *Non-Topographic Photogrammetry, Second Edition*, American Society for Photogrammetry and Remote Sensing, 1989.

## **REFEREED JOURNAL PAPERS**

J.C. McGlone, et al., "ASPRS Report to the U.S. Geological Survey on Digital Orthoimagery," *Photogrammetric Engineering and Remote Sensing*, 72(2):95-108, 2006.

W. Harvey, J. C. McGlone, D. M. McKeown, J. Irvine, "User-Centric Evaluation of Semi-Automated Road Extraction," *Photogrammetric Engineering and Remote Sensing*, 70(12):1353-1364, 2004.

D. M. McKeown, Jr., S. D. Cochran, S.J. Ford, J. C. McGlone, J. A. Shufelt, D. A. Yocum, "Fusion of HYDICE Hyperspectral Data with Panchromatic Imagery for Cartographic Feature Extraction," *IEEE Transactions on Geoscience and Remote Sensing*, 37(3):1261–1277, (Special Issue on Data Fusion), May, 1999.

C. McGlone, "Report on the activities of ISPRS Commission II," *Photogrammetric Engineering and Remote Sensing*, 61(3):265–269, March, 1995.

J.C. McGlone, E.M. Mikhail, "Evaluation of Aircraft MSS Analytical Block Adjustment," *Photogrammetric Engineering and Remote Sensing*, 51(2):217–225, February, 1985.

G. W. Marks, E.M. Mikhail, J.C. McGlone, "Block Triangulation by Bundles and Stereo-Units," *Journal of the Surveying and Mapping Division*, American Society of Civil Engineers, Vol. 106, No. SU1, November, 1980.

## **REFEREED CONFERENCE/WORKSHOP PAPERS**

Chris McGlone, "Block Adjustment of Linear Pushbroom Imagery with Geometric Constraints," *International Archives of Photogrammetry and Remote Sensing*, XXXII(2):198-205. London, July, 1998.

Stephen J. Ford, Dirk Kalp, and J. Chris McGlone, "Preliminary Results on the Analysis of HYDICE Data for Information Fusion in Cartographic Feature

Extraction,” *Proceedings of the SPIE: Integrating Photogrammetric Techniques with Scene Analysis and Machine Vision*, Volume 3072, pp. 67–86, Orlando, FL, April, 1997.

Chris McGlone, “Bundle Adjustment with Geometric Constraints for Hypothesis Evaluation,” Presented paper, *International Archives of Photogrammetry and Remote Sensing*, XXXI(3):529-534, Vienna, Austria, July, 1996.

Chris McGlone, “Bundle Adjustment with Object Space Geometric Constraints for Site Modeling,” *Proceedings of the SPIE: Integrating Photogrammetric Techniques with Scene Analysis and Machine Vision*, Volume 2486, pp. 25–36, Orlando, FL, April, 1995.

J. Chris McGlone, Jefferey A. Shufelt, “Exploiting Vanishing Point Geometry for Monocular Building Extraction and Height Estimation,” *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, June, 1994.

J. Chris McGlone, Jefferey A. Shufelt, “Incorporating Vanishing Point Geometry In Building Extraction Techniques,” *Proceedings of the SPIE, Volume 1944*, Orlando, FL, April, 1993, pp. 273--284.

David M. McKeown, Jr., J. Chris McGlone, “Integration of Photogrammetric Cues into Cartographic Feature Extraction,” *Proceedings of the SPIE, Volume 1944*, Orlando, FL, April, 1993, pp. 2--15.

Chris McGlone, “Automated Image-Map Registration using Active Contour Models and Photogrammetric Techniques,” *Proceedings of the SPIE, Volume 1070*, Los Angeles, CA, January 1989.

## **UNREFEREED CONFERENCE/WORKSHOP PAPERS**

J. Chris McGlone, Change detection between existing feature data and new imagery, Proceedings, American Society for Photogrammetry and Remote Sensing Annual Meeting, March, 2013.

J. Chris McGlone, “Experience in the Modeling of Complex Urban Areas Using Lidar,” Proceedings, International Lidar Mapping Forum, Denver, CO, March 3-5, 2010.

J. Chris McGlone, “Modeling and Predicting the Performance of Semi-automated Systems,” Proceedings, American Society for Photogrammetry and Remote Sensing Annual Meeting, March, 2005.

J. A. Shufelt, J. C. McGlone, “DEM Fusion To Support Improved Geospatial Visualization,” Proceedings, *Terrain Data: Applications and Visualization* –

*Making the Connection*, American Society for Photogrammetry and Remote Sensing, October 28-30, 2003, Charleston, South Carolina.

Stephen J. Ford, J. Chris McGlone, Steven D. Cochran, Jefferey A. Shufelt, Wilson A. Harvey, David M. McKeown, Jr., "Analysis of HYDICE Data for Information Fusion in Cartographic Feature Extraction," *Proceedings of the International Geoscience and Remote Sensing Symposium, (IGARSS'98)*, July, 1998, Seattle, WA.

J. Chris McGlone, Jefferey A. Shufelt, "Incorporating Vanishing Point Geometry Into a Building Extraction System," *Proceedings: ARPA Image Understanding Workshop*, Washington, DC, April 1993, pp. 437--448.

Chris McGlone, "Design and Implementation of an Object-Oriented Photogrammetric Toolkit," *International Archives of Photogrammetry and Remote Sensing, XXIX(B2)*: 334--338, Washington, DC, 1992.

Chris McGlone, Tom Sepez, "The Fairchild Image Exploitation System Architecture," *Proceedings of the Schlumberger Software Conference*, Ann Arbor, MI, November, 1988.

J.C. McGlone, L.G. Gillen, "Applications of the Maco 35/70 in Close-Range Photogrammetry," *International Archives of Photogrammetry and Remote Sensing, XXV(A5)*: 489--498, Rio de Janeiro, June, 1984.

L.G. Gillen, J.C. McGlone, "Operation of the Maco 35/70 Small Format Analytical Stereoplotter System," *Proceedings of the 50th Annual Meeting, American Society for Photogrammetry*, Washington, DC, March, 1984.

J.C. McGlone, E.M. Mikhail, "Geometric Constraints in Multispectral Scanner Data," *Proceedings of the 48th Annual Meeting, American Society for Photogrammetry*, Denver, March, 1982.

E.M. Mikhail, J.C. McGlone, "Current Status of Metric Reduction of (Passive) Scanner Data," *Proceedings of the 14th Congress of the International Society for Photogrammetry, XXIII:(B3)*, Hamburg, July, 1980.

J.C. McGlone, J.R. Baker, E.M. Mikhail, "Metric Information from Aircraft Multispectral Scanner Data," *Proceedings of the 45th Annual Meeting, American Society for Photogrammetry*, Washington, DC, March, 1979.

## **TECHNICAL REPORTS**

George Bulwinkle, Steven Cochran, J. Chris McGlone, David McKeown, and Jefferey Shufelt, *Robust Exchange of Cartographic Models for Buildings and Roads: The CMU MAPSLab Site Exchange Format*, Carnegie Mellon University

Computer Science Department Technical Report CMU-CS-98-134, November, 1998.

Stephen J. Ford, Dirk Kalp, and J. Chris McGlone, *Preliminary Results on the Analysis of HYDICE Data for Information Fusion in Cartographic Feature Extraction*, Computer Science Department Technical Report CMU-CS-97-116.

J. C. McGlone, J. A. Shufelt, *Projective and Object Space Geometry for Monocular Building Extraction*, CMU-CS-94-118, CMU-SCS Technical Report, March, 1994.

J.C. McGlone, E.M. Mikhail, *Photogrammetric Analysis of Aircraft Multispectral Scanner Data*, Technical Report CE-PH-81-3, School of Civil Engineering, Purdue University, West Lafayette, IN, October, 1981.

#### **OTHER PUBLICATIONS**

“Automatic Extraction of Man-Made Objects from Aerial and Space Images (II)”, Book Review, *ISPRS Highlights*, 3(1): 21--23, January, 1998.

#### **PATENTS AND INVENTION DISCLOSURES**

United States Patent 5,504,523 (co-inventor Ralph Wight), “Electronic Image Unsteadiness Compensation.”

### **IV. CITATIONS AND AWARDS**

- 2013 American Society for Photogrammetry and Remote Sensing Outstanding Service Award.
- 2012 ASPRS Potomac Region Member of the Year
- Fellow, American Society for Photogrammetry and Remote Sensing, 2010.
- SAIC Technical Fellow, 2006.
- 2005 American Society for Photogrammetry and Remote Sensing Outstanding Service Award.
- 2004 American Society for Photogrammetry and Remote Sensing Photogrammetric (Fairchild) Award. This award, founded in 1944, is given in recognition of contributions to the field of photogrammetry.
- Certificate of Appreciation for Meritorious Service, American Society for Photogrammetry and Remote Sensing, 1994.
- 1979 Wild-Heerbrugg—American Society for Photogrammetry and Remote Sensing Fellowship in Photogrammetry, an award given annually to the most outstanding graduate student in photogrammetry in the United States.

### **V. INVITED TALKS**

- Presentation, National Science Foundation Workshop on Geospatial and Geotemporal Informatics, January 8-9, 2009.



- Presentation, “Photogrammetry: Practice and Applications”, National Research Council Committee on Floodplain Mapping Technologies, October 17, 2006.
- Member, panel discussion, “What are the Next Trends in Softcopy Photogrammetry?,” American Society for Photogrammetry and Remote Sensing Annual Meeting, Baltimore, MD, March, 2005.
- D. M. McKeown, G. Bulwinkle, S. Cochran, W. Harvey, C. McGlone, J. Shufelt, “Performance Evaluation for Automatic Feature Extraction,” International Archives of Photogrammetry and Remote Sensing, XXXIII(B2): 379–394, Amsterdam, July, 2000.
- C. McGlone, “Some considerations in 3D object modeling,” Joint Workshop of ISPRS WG III/2 and Inter-Commission WG II/III, The Role of Models in Automated Scene Analysis, International Society for Photogrammetry and Remote Sensing, Stockholm, Sweden, August, 1995.
- C. McGlone, “Sensor modeling in image registration,” *Proceedings, Mapping and Remote Sensing Tools for the 21st Century*, Washington, DC, August, 1994.

## VI. PANELS

Member, National Geospatial-Intelligence Agency Generic Software Exploitation Tool (GSET) Validation/Analysis Panel. Tool for evaluation of sensor models submitted to NGA under the Community Sensor Model Working Group.

Chairman, ASPRS Panel on the USGS Digital Orthoimagery Program. “ASPRS Panel Report to the U.S. Geological Survey on Digital Orthoimagery,” *Photogrammetric Engineering and Remote Sensing*, 72(2):95--108, 2006.

## **VII. PROFESSIONAL ACTIVITIES**

President (2017), Potomac Region, American Society for Photogrammetry and Remote Sensing

ISPRS Journal of Photogrammetry and Remote Sensing Editorial Advisory Board

Journal paper reviews:

- Photogrammetric Engineering and Remote Sensing
- Photogrammetric Record
- ISPRS Journal of Photogrammetry and Remote Sensing
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Geoscience and Remote Sensing
- International Journal of Advanced Robotics Systems

### **CONFERENCE AND WORKSHOP COMMITTEES**

- Program Committee, IEEE/ISPRS workshop on Multi-Sensor Fusion for Outdoor Dynamic Scene Understanding, Columbus, OH, June 28, 2014.
- Program Committee, ISPRS Workshop on Image Sequence Analysis for Object and Change Detection, Antalya, Turkey, Nov 11-17, 2013.
- Program Committee, ISPRS Workshop on Virtual City Modeling, University of Regina, Canada, May 28-31, 2013.
- Program Committee, Commission III, ISPRS Congress, 2012.
- Technical program chairman, ASPRS Potomac Region Geotech 2012, Fairfax, VA, October 25-26, 2012.
- Program Committee, ISPRS Commission III Symposium, Photogrammetric Image Analysis, Munich, October 2011.
- Technical program chairman, ASPRS Potomac Region Geotech 2011, Silver Springs, MD, October 12-13, 2011.
- Program Committee, ISPRS Commission III Symposium, Photogrammetric Computer Vision and Image Analysis, Paris, September 2010.
- Program Committee, ISPRS CMRT09 (City Models, Roads, Traffic).
- Co-chair, ISPRS Commission III, Working Group 5, "Image Sequence Analysis," 2008-2012.
- Technical program chairman, ASPRS Potomac Region Geotech 2008, Silver Springs, MD, October 7-8, 2008.
- Reviewer, Commission III, ISPRS Congress Beijing, 2008.
- Program Committee, ISPRS Conference on Photogrammetric Image Analysis, 2007.

- Technical Committee Chairman, ASPRS Potomac Region.
- Reviewer, ISPRS Com. III Photogrammetric Computer Vision 2006.
- Program Committee, ISPRS Congress, Istanbul, July 2004.
- Program Committee, ISPRS conference on Photogrammetric Image Analysis, September, 2003.
- Session Chairman and Program Committee, ISPRS Congress, Amsterdam, July 2000.
- Program committee, ISPRS Workshop on Models and Strategies for Object Recognition, July, 2000, Bonn.
- Program committee, ISPRS Working Group II/6 Workshop, Paris, France, April, 1999.
- Session Chairman, ISPRS Commission II Symposium, Cambridge, England, July 1998.
- Session chairman, ASPRS conference on Softcopy Photogrammetry Applications, Washington, DC, July 27-30, 1997.
- Conference co-chair, SPIE Conference on Integrating Photogrammetric Techniques with Scene Analysis and Machine Vision, Orlando, FL, April 21-23, 1997.
- Program committee, Workshop on Semantic Modeling for the Acquisition of Topographic Information from Images and Maps, May 21-23, 1997, Bonn, Germany.
- Session Chairman, ISPRS Congress, Vienna, Austria, July 1996.
- Program committee, Workshop on Performance Characteristics of Vision Algorithms, Cambridge, UK, April 19-20, 1996.
- Conference co-chair and session chair, SPIE Conference on Integrating Photogrammetric Techniques with Scene Analysis and Machine Vision, Orlando, FL, April, 1995.
- Conference co-chair and session chair, SPIE Conference on Integrating Photogrammetric Techniques with Scene Analysis and Machine Vision, Orlando, FL, April 12-16, 1993.
- Conference co-chair and session chair, SPIE Conference on Reconnaissance, Astronomy, Remote Sensing, and Photogrammetry, Los Angeles, CA, January 15-20, 1989.

## CONSULTING

- **CIA Office of Research and Development:** Evaluated the performance and implementation of a close-range photogrammetric package under development.
- **Environmental Research Institute of Michigan (ERIM):** Photogrammetric consultant on a project with the Environmental Research Institute of Michigan (ERIM) which studied the use of interferometric synthetic aperture radar for elevation modeling and building extraction.

- **TMA Technologies:** I consulted on a system which measured the gap between and alignment of abutting panels. Both machine vision and photogrammetric techniques were involved in the problem.
- **Telesis Corporation:** I was a consultant on a proposal to NASA concerning an object-oriented softcopy photogrammetric system.

#### **PROFESSIONAL SOCIETY MEMBERSHIPS**

- American Society for Photogrammetry and Remote Sensing

#### **PROFESSIONAL REGISTRATION**

- Certified Photogrammetrist #1272, American Society for Photogrammetry and Remote Sensing, renewed 2010
- Registered land surveyor in the Commonwealth of Kentucky (registration currently inactive).