

Dr. Mwafag S. Ghanma

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EDUCATION

Ph.D. in Geomatics Engineering, University of Calgary, Canada, 2006

M.Sc. in Civil Engineering, Yarmouk University, Irbid, Jordan, 1987

B.Sc. in Civil Engineering, Yarmouk University, Irbid, Jordan, 1984

Link to Ph.D. thesis: <http://www.geomatics.ucalgary.ca/Papers/Thesis/AH/06.20241.MwafagGhanma.pdf>

Geomatics Engineering is a modern discipline, which integrates acquisition, modeling, analysis, and management of spatially referenced data, i.e. data identified according to their locations. Based on the scientific framework of geodesy, it uses terrestrial, marine, airborne, and satellite-based sensors to acquire spatial and other data. It includes the process of transforming spatially referenced data from different sources into common information systems with well-defined accuracy characteristics.

A Geomatics Engineer uses knowledge coming from several disciplines, such as:

- **Geodesy** (terrestrial, celestial, and orbital coordinate systems measurements)
- **Positioning and Navigation** (e.g. with GPS)
- **Digital Imaging** (how to extract useful information from images according to the application, e.g. environmental studies or agricultural studies) and **Mapping** (how to make the maps of tomorrow) using **Photogrammetry** (airborne photographs) or **Remote Sensing** (images taken by satellite sensors)
- **Geographical Information Systems** (computer systems capable of assembling, storing, manipulating, and displaying geographically referenced information)
- **Land Tenure Systems** (land information managing, land surveying, land right).

LANGUAGES

Fluency in written and spoken English, in addition to the native Arabic language.

PROFESSIONAL EXPERIENCE

Sep. 2009 – present	Faculty Member , Department of Civil & Environmental Engineering, Faculty of Engineering, United Arab Emirates University, Al-Ain, UAE.
Sep. 2006 – Aug. 2009	Faculty Member , Department of Surveying and Geomatics Engineering, Faculty of Engineering, Al-Balqa' Applied University, Al-Salt, Jordan
Sep. 2002 – Apr. 2006	Graduate Research Associate , Department of Geomatics Engineering, University of Calgary, Calgary, Canada
Apr. 2001 – Sep. 2002	Research Associate , Department of Civil and Environmental Engineering and Geodetic Science, The Ohio State University, Columbus, Ohio.
Oct. 1997 – Sep. 2001	Faculty Member , Department of Surveying and Geomatics Engineering, Faculty of Engineering, Al-Balqa' Applied University, Al-Salt, Jordan
Dec. 1989 – Sep. 1997	Head, Computer and Quantity Surveying Section , Department of Engineering Projects, Jordan University of Science & Technology, Irbid, Jordan

- Dec. 1988 – Dec. 1989 **Head, Computer Department**, Sight & Sound Education Centre, Amman, Jordan
- Jun. 1986 – Jun. 1988 **Conscript Engineer**, Jordan Armed Forces
- Sep. 1984 – Jun. 1986 **Teaching & Research Assistant**, Department of Civil Engineering, Yarmouk University, Irbid, Jordan

TEACHING EXPERIENCE

Taught the following courses for B.Sc. engineering students:

- General Engineering
 - Engineering Drawing (Manual drafting and using AutoCAD)
 - Descriptive Geometry
 - Statics for Engineers
 - Dynamics for Engineers
 - Strength of Materials
 - Engineering Economy
- Geomatics and Surveying Engineering
 - Design and Implementation of Geographic Information Systems (Advanced GIS)
 - Object Oriented Programming using C# with application to Geomatics Engineering
 - Adjustment Computations
 - Cartography and Map Projections
 - Route Surveying
 - Geomatics Networks
 - Surveying for Engineers
 - Computer Aided Mapping
 - Digital Terrain Modeling (Graduate level)
 - Map Projections and Geometric Geodesy (Graduate level)
 - Independent Studies in Civil Engineering (Graduate level)

Can teach the following courses with high aptitude in geomatics and surveying engineering in addition to many courses in civil engineering

- Surveying for Engineers
- Geographic Information Systems (GIS)
- Remote Sensing
- Analytical and Digital Photogrammetry
- Close-range Photogrammetry and LIDAR
- Advanced Photogrammetric and Ranging Techniques
- Digital Elevation Models
- Digital Image Processing

PUBLICATIONS – GEOMATICS ENGINEERING

Journal Papers

1. Habib, A., M. Ghanma, S. Shin, K. Kim, C. Kim, E. Kim. Algorithms for Multi-Sensor and Multi-Primitive Photogrammetric Triangulation. Submitted to the ISPRS Journal, April, 2006.
2. Habib, A., M. Ghanma, and E. Mitishita, 2005, Photogrammetric Georeferencing Using LIDAR Linear and Areal Features, (Invited paper), Korean Journal of Geomatics, Vol. 5, No. 1, December 2005, pp. 7-19.
3. Habib, A., M. Ghanma, M. Morgan, and R. Al-Ruzouq, 2005, Photogrammetric and LIDAR Data Registration Using Linear Features, Photogrammetric Engineering & Remote Sensing, Vol. 71, No. 6, June 2005, pp. 699–707
4. Habib, A., M. Ghanma, and E. Mitishita, 2004, Co-Registration of Photogrammetric and LIDAR Data: Methodology and Case Study, (Invited paper), Brazilian Journal of Cartography (RBC), Vol. 56/01, July 2004, pp.1-13.

Conferences:

5. Habib, A., M. Ghanma, E. Mitishita, A. Machado, E. Kim, C. Kim, 2005, Comparative Analysis of the Performance of Metric-Analog Cameras, Amateur-Digital Cameras, and LIDAR, IGARSS 2005, International Geoscience and Remote Sensing Symposium, Seoul, Korea (27-29 July, 2005)
6. Habib, A., M. Ghanma, and E. Mitishita, 2005, Indirect Geo-Referencing of Photogrammetric Models Using LIDAR Data, Canadian Institute of Geomatics 98th Annual Conference, "Geomatics: Powering the Future", Ottawa, Ontario, Canada, (13-15 June, 2005)
7. Habib, A. and M. Ghanma, 2005, Lidar Features for the Indirect Geo-Referencing of Photogrammetric Data, ISPRS Working Group I/2 Workshop 2005, "3D Mapping from InSAR and LiDAR", Banff, Alberta, Canada, (7-10 June, 2005)
8. Mitishita, E., A. Habib, A., Machado, and M. Ghanma, 2005, Urban Vector Mapping Using Low Cost Digital Cameras and Lidar Data: A Case Study, ISPRS Working Group I/2 Workshop 2005, "3D Mapping from InSAR and LiDAR", Banff, Alberta, Canada, (7-10 June, 2005)
9. Habib, A., M. Ghanma, 2005, Co-Registration of Photogrammetric and LIDAR Surfaces for the Evaluation and Validation of Systems' Calibration, GEOIDE's 7th Annual Scientific Conference, Québec, Québec, Canada (29-31 May 2005)
10. Ghanma, M. 2005, New Approach for Image Geo-Referencing Utilizing LIDAR Data, The Second Annual Faculty of Engineering Graduate Student Research Conference, Calgary, Canada (2-3 May 2005)
11. Habib, A., M. Ghanma, E. Kim, 2005, LIDAR Data for Photogrammetric Geo-Referencing, FIG Working Week 2005 and GSDI-8, "From Pharaohs to Geoinformatics", Cairo, Egypt, (16–21 April 2005)
12. Habib, A., M. Ghanma, M. F. Morgan, E. Mitishita, 2004, Integration of Laser and Photogrammetric Data for Calibration Purposes, XXth ISPRS Congress, Istanbul, Turkey, PS WG II/2 Systems for SAR and LIDAR Processing, pp.170, (12-23 July 2004)
13. Habib, A., M. Ghanma, M. Tait, 2004, Integration of LIDAR and Photogrammetry for Close Range Applications, XXth ISPRS Congress, Istanbul, Turkey, PS ThS 1 Integration and Fusion of Data and Models, (12-23 July 2004)
14. Habib, A., M. Ghanma , C. J. Kim, E. Mitishita, 2004, Alternative Approaches for Utilizing LIDAR Data as a Source of Control Information for Photogrammetric Models, XXth ISPRS Congress, Istanbul, Turkey, PS WG I/5 Platform and Sensor Integration, pp.193, (12-23 July 2004)

15. Habib, A., Ghanma, M., Tait, M., and Fox, R., 2003. Using Ground Based Laser Scanners to Establish the Orientation of Terrestrial Imagery. Proceedings of the 6th Conference on Optical 3-D Measurements Techniques, pp. 306-314, Zurich, Switzerland, (22-15 September 2003)

Reports:

16. Habib, A., Ghanma, M., Al-Ruzouq, R., Morgan, M., Mrstik, P., Mitishita, E., 2005. Co-Registration of Photogrammetric And LIDAR Surfaces. Submitted to the GEOIDE Research Network, Canada. (52 pages).
17. Habib, A., Ghanma, 2005. Development of Multi-Sensor and Multi-Primitive Triangulation Algorithms: Incorporation of LIDAR Data in Photogrammetric Triangulation. Submitted to the Korean Electronics and Telecommunications Research Institute (ETRI), Korea. (67 pages).

PUBLICATIONS – CIVIL ENGINEERING

Journal Papers:

18. M. Resheidat and M. Ghanma, "*Accelerated Strength and Testing of Concrete Using Blended Cement*", ACBM- Advanced Cement Based Materials Journal, Elsevier Science Publishing Company, Inc. New York, 1997, Vol. 5, pp. 49-56.
19. M. Resheidat, M. Ghanma, C. Sutton and W.F. Chen, "*Flexural Rigidity of Biaxially Loaded RC Rectangular Column Sections*", Journal of Structural Engineering, Vol. 55, No. 4, 1995, pp. 601-614.
20. M. Resheidat, M. Ghanma, K. Numayr, C. Sutton and W.F. Chen, "*Improved EI Estimation for Reinforced Concrete Circular Columns*", Materials and Structures RILEM Journal, Chapman & Hall, England, Vol. 27, 1994, pp. 515-526.

Conferences:

21. N. Al-Araji, M. Resheidat, M. Ghanma, "*New Refractory Bricks Using Cement and Ores*", Proceedings of the Cement and Concrete Technology in the 2000s, TCMB Turkish Cement Manufacturing Association and European Cement Association, Istanbul, Turkey, 6-10 September 2000, pp. VI/243-251.
22. M. Resheidat and M. Ghanma, "*Improved Working Stress Design (WSD) for Reinforced Concrete Structural Elements*", Proceedings of the Fifth Conference on Concrete Technology for Developing Countries, National Council of Cement and building Materials, New Delhi, India, 17-19 November 1999, pp. VIII/76-85.
23. M. Resheidat and M. Ghanma, "*Experimental Investigation of Concrete Subjected to Elevated Temperatures*" Proceedings of the International Congress on Creating with Concrete, University of Dundee, Dundee, Scotland, 6-10 September 1999.
24. M. Resheidat and M. Ghanma, "*Computer Aided Design of Columns Subjected to Biaxial Bending*", Proceedings of the Fourth Arab Structural Engineering Conference, Cairo University, 18-21 November, 1991, pp. III/142-156.

Reports:

25. M. Resheidat, M. Ghanma, C. Sutton and W.F. Chen, "*Flexural Rigidity of Biaxially Loaded RC Rectangular Column Sections*", Structural Engineering Report No. CE-STR-93-9, Purdue University, West Lafayette, IN, USA, 1993.
26. M. Resheidat, M. Ghanma, C. Sutton and W.F. Chen, "*Improved EI for RC Circular Columns*", Structural Engineering Report No. CE-STR-93-13, Purdue University, West Lafayette, IN, USA, 1993.