

## Mehran Ghandehari

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💬 [Google Scholar Profile](#)

Sex [male](#) | Date of birth [19/12/1987](#) | Marital status [Married](#)

### CURRENT ACTIVITY

Ph.D. Candidate and Graduate Assistant, Department of Geography, University of Colorado Boulder

### EDUCATION

- 2014-now **Ph.D. Candidate (ABD)**  
Geography-GIScience, Department of Geography, College of Arts and Sciences, University of Colorado Boulder, Boulder, Colorado, USA
- Dissertation Topic: Cross-Scale Analysis of Surface-Adjusted Measurements in Spatial Analysis
  - Advisor: Prof. Barbara P. Battenfield
  - GPA: **3.95** / 4
- 2010-2012 **M.Sc. in Geospatial Information Systems (GIS)**  
School of Surveying and Geospatial Engineering, College of Engineering, University of Tehran, Tehran, Iran
- Thesis Title: A Voronoi-base Algorithm for Medial Axis Extraction (Case Study: Watershed Delineation from River Networks), Grade: 4 / 4
  - Advisor: Dr. Farid Karimipour
  - GPA: **3.65** / 4
- 2006-2010 **B.Sc. in Civil Surveying (Geomatics)**  
Department of Surveying and Geomatics Engineering, College of Engineering, University of Isfahan, Isfahan, Iran
- Thesis Title: Optimization and Design of Geodetic Networks Using Static and Kinematic GPS Measurements, Grade: 20/20
  - GPA: **3.41** / 4
- 2002-2006 **Diploma and Pre-University Courses in Physics and Mathematics**  
Salamat high school, Isfahan, Iran
- GPA: **3.47** / 4

### RESEARCH INTERESTS

- Geographic Information Science: Geocomputation, Geospatial Computational Geometry, Geospatial Data Science
- Environmental Modelling: Terrain Modelling, Lidar, GIS Applications in Water Resources
- Scientific Visualization: Analytical Cartography, Map Projections

**AWARDS & HONORS**

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- 2018 Aug Mabel Duncan Award (2000\$), Geography department, University of Colorado Boulder
- 2018 Apr Received outstanding teaching assistant award (750\$), the department of Geography annual award for excellence in graduate teaching, University of Colorado Boulder
- 2018 Apr Receive the James A. and Jeanne B. DeSana graduate research scholarship (250\$) to support graduate student research
- 2018 Feb Received the ASPRS Rocky Mountain Region scholarship 2018 in the doctorate category (1000\$), American Society for Photogrammetry and Remote Sensing, Rocky Mountain Region
- 2017 Mar Received the Beverly Sears graduate student grant 2017 (1000\$), University of Colorado Boulder
- 2017 Feb Awarded travel fund to attend the 28th International Cartographic Conference in Washington, DC (The funds were obtained through a National Science Foundation (NSF) grant) (1000\$)
- 2016 Dec Received scholarship to participate in the basics of supercomputing boot camp January 9-10, 2017 (<https://www.rc.colorado.edu/meetings/basicsofsupercomputing2017>)
- 2016 Jul Received the 2016 GIS Colorado Scholarship (1500\$)
- 2016 Sep Received the 2016 United Government of Graduate Students UCB travel grant (300\$)
- 2015 Apr Received the first poster award in the 10th Annual Hydrologic Sciences Research Symposium (100\$)
- 2014 Mar Awarded travel fund (1000\$), Geography department, University of Colorado Boulder
- 2012 Selected as a member of National Elites Foundation (Society of prominent students of the country) of Iran
- 2012 Received the top student award in M.Sc. program, College of Engineering, University of Tehran, Tehran, Iran
- 2010-2012 Two Years Graduate Program Scholarship, Ministry of Science, Research and Technology, Iran
- 2010 Jul Ranked the 2nd among 1553 applicants in the national M.Sc. entrance exam, Iran
- 2009 Selected as the exceptional talented student by the University Educational Committee, University of Isfahan, Isfahan, Iran
- 2009 Received the top student award in B.Sc. program, College of Engineering, University of Isfahan, Isfahan, Iran
- 2006-2009 Four Years Undergraduate Program Scholarship, Ministry of Science, Research and Technology, Iran

## PUBLICATIONS

## Journal Papers

<https://orcid.org/0000-0002-7372-7687>

**Mehran Ghandehari**, Barbara P. Buttenfield, and Carson J. Q. Farmer (2018). 'Comparing the Accuracy of Interpolated Terrain Elevations Across Spatial Resolution', *the International Journal of Remote Sensing*, Under revision.

Farid Karimipour, **Mehran Ghandehari**, and Hugo Ledoux (2013). 'Watershed Delineation from the Medial Axis of River Networks', *Computers & Geosciences*, Vol. 59, No. 3, pp. 132-147.

Farid Karimipour and **Mehran Ghandehari** (2013). 'Voronoi-based Medial Axis Approximation from Samples: Issues and Solutions', *Transactions on Computational Sciences Journal*, LNCS 8110, Vol. 20, pp. 138-157.

**Mehran Ghandehari** and Farid Karimipour (2013). 'A New Method for Road Centerline Extraction using the Medial Axis', *Journal of Geomatics Science and Technology*, Vol. 2, No. 3, pp. 71-87 (In Persian).

**Mehran Ghandehari**, Mohsen Goodarzi, and Masumeh Hamidi (2013). 'A New Method for Detecting Single and Cluster Blunders of Digital Elevation Model Based on the Genetic Algorithm', *Geospatial Engineering Journal*, Vol. 3, No. 4, pp. 1-8 (In Persian).

## Conference Papers

**Mehran Ghandehari**, and Barbara P. Buttenfield (2018). 'Slope-Adjusted Surface Area Computations in Digital Terrain', *Proceedings of Geomorphometry 2018 conference, the 5th International Conference of the ISG*, Boulder, Colorado, August 13-17

**Mehran Ghandehari**, Barbara P. Buttenfield, and Carson J. Q. Farmer (2017). 'Cross-Scale Analysis of Sub-Pixel Variations in Digital Elevation Models', In: M. P. Peterson (Ed.), *Advances in Cartography and Giscience 2017*, Lecture Notes in Geoinformation and Cartography (LNGC), Springer, Cham. pp. 359-373.

Barbara P. Buttenfield, **Mehran Ghandehari**, Stefan Leyk, Lawrence V. Stanislawski, Meg Brantley, and Yi Qiang (2016). 'Measuring Distance "As the Horse Runs": Cross-Scale Comparison of Terrain-Based Metrics', *The 9th International Conference on Geographic Information Science, GIScience 2016*, Montreal, Canada, September 27-30

Farid Karimipour, **Mehran Ghandehari**, and Hugo Ledoux (2013). 'Medial Axis Approximation of River Network for Catchment Area Delineation', *Developments in Multidimensional Spatial Data Models*, Abdul Rahman, A. and Boguslawski, P. and Gold, C. and Said, M.N. (Eds.). Lecture Notes in Geoinformation and Cartography (LNGC), Springer-Verlag Berlin Heidelberg. pp. 1-15.

**Mehran Ghandehari** and Farid Karimipour (2012). 'Voronoi-based Curve Reconstruction: Issues and Solutions', In: B. Murgante et al. (Eds.) *In Proceedings of the International Conference on Computational Science and Its Applications (ICCSA 2012)*, Salvador de Bahia, Brazil, June 18-21, 2012, Lecture Notes in Computer Science (LNCS), Springer-Verlag Berlin Heidelberg, Vol. 7334, pp. 194-207.

**Mehran Ghandehari** (2013). 'Digital Elevation Model Approximation from Stream Networks: A Reversed Approach', *ISPRS Proceedings of the 2nd International Conference on the Sensors & Models in Photogrammetry and Remote Sensing Conference (SMPR 2013)*, Tehran, Iran, October 5-8, 2013, pp. 175-180.

Farid Karimipour and **Mehran Ghandehari** (2012). 'A Stable Voronoi-based Algorithm for Medial Axis Extraction through Labeling Sample Points', *IEEE Proceedings of the 9th International Symposium on Voronoi Diagrams in Science and Engineering (ISVD 2012)*, New Jersey, USA, June 27-29, 2012, pp. 115-123.

**Mehran Ghandehari** and Farid Karimipour (2012). 'Computational Geometry and its Applications in GIS (Case Study: Voronoi Diagram)', *In Digital Proceedings of 19th Iranian National Conference on Geomatics (Geomatic 91)*, Iranian National Cartographic Center, Tehran, Iran, May 7-9, 2012 (In Persian).

## Conference Presentation (Abstract)

Buttenfield BP, Yi Qiang, Carson J. Q. Farmer and **Merhan Ghandehari** (2017). Cross-Scale Analysis of Surface Adjusted Elevation and Distance Measurements. *USGS-CEGIS Annual Research Meeting*, Rolla Missouri, 14 June

Sayedeh Sara Sayedi, Bahram Malekmohammadi, and **Merhan Ghandehari** (2017). 'Impact of Climate Change and Land Use on Hydrologic Ecosystem Services in the Zayanderood Watershed in Iran', Abstract, *12th Annual Hydrologic Sciences Research Symposium*, Boulder, Colorado, April 6-7

**Mehran Ghandehari**, Barbara P. Buttenfield, and Carson J. Q. Farmer (2016). 'What if the Earth is Not Flat?

Cross-Scale Analysis of Sub-Pixel Variations in Digital Elevation Models', Abstract, *AGU 2016*, San Francisco, California, December 12-15

Barbara P. Buttenfield, **Mehran Ghandehari**, and Meg Brantley (2016). 'Surface-Adjusted Distance Comparison for Multi-Scale Terrain Analysis'. *USGS-CEGIS Annual Research Meeting*, Rolla Missouri, 29 June.

**Mehran Ghandehari**, Barbara P. Buttenfield (2016). 'Hydrologic Flow Accumulation Modeling using Surface Area', Abstract, *GIS in the Rockies conference*, Denver, Colorado, September 21-22

**Mehran Ghandehari**, and Barbara P. Buttenfield (2015). 'Density-Based Stream Network Extraction from Digital Elevation Models', Abstract, *10th Annual Hydrologic Sciences Research Symposium*, Boulder, Colorado, April 2-3. First place award for Best Poster.

## PROFESSIONAL EXPERIENCE

### Research Experience

- 2018 (Summer) Graduate Research Assistant, Meridian Lab, University of Colorado Boulder
- Evaluated the scale-, algorithm-, and topography-dependence of surface area computations from a regular grid DEM using high performance computing.
  - Experienced in processing and performing spatial and statistical modelling on large volumes of geospatial data using open source Python modules (GDAL, Multiprocessing, Rasterio) and Amazon EC2 instance.
- 2017 (Summer) Graduate Research Assistant, Data Harmonization Project, Earth lab, University of Colorado Boulder (<http://www.colorado.edu/earthlab/>)
- Analysed sub-pixel variations of elevation in DEMs across various scales using Python (Rasterio, and Geopandas).
  - Evaluated the DEM data accuracy using 400,000 geodetic control points in Google Earth Engine.
- 2017 (Summer) Project Assistant, Dr. Abbass Bazeghi , [equalareamaps@gmail.com](mailto:equalareamaps@gmail.com)
- Coded world equal area map projections using python and ArcPy
  - Produced high quality world equal area maps in AutoCad
- 2015 (Summer) Graduate Research Assistant, USGS Center for Excellence in GIS grant., Department of Geography, University of Colorado at Boulder
- Designed and developed GIS algorithms in Python for automated extraction of features from DEM, LiDAR and the USGS National Hydrography Dataset.
  - Collaborated with university and federal researchers under the direction of Dr. Barbara Buttenfield (University of Colorado) and Larry Stanislawski (USGS).
- May 2011- Aug 2012 Graduate Research Assistant, Department of Surveying and Geomatics Engineering, University of Tehran, Tehran, Iran
- Proposed a novel approach for delineating watersheds using computational geometry
  - Developed a GUI interface in Matlab for extracting medial axis of polygons

## Teaching Experience

- 2014-now Teaching Assistant, Department of Geography, University of Colorado Boulder
- GIS Programming - GEOG4303/5303 (Spring 2018); Instructor: Prof. Stefan Leyk
  - Cartography, Information Design and Representation - GEOG3053 (2015, 2016, 2017, and Fall 2018), Instructors: Prof. Barbara Buttenfield, Dr. David Parr, Dr. Sara Kelly, Dr. Eric Lovell
  - Introduction to GIS - GEOG4103/5103 (Fall 2014, Spring 2015), Instructors: Prof. Barbara Buttenfield, Dr. Chris Anderson
- Aug 2013 - May 2014 Part-time Instructor, Geomatics Department, Daneshpajooan University, Isfahan, Iran
- Introduction to GIS
  - GIS Applications
  - GIS Software
  - Theory of GPS
- 2011-Feb Invited lecturer, GIS&RS department, Graduate University of Kerman, Kerman, Iran
- ArcMap 9.3 software (2-day workshop)
- Fall 2011 Teaching Assistant, Department of Surveying and Geomatics Engineering, University of Tehran, Tehran, Iran
- Introduction to GIScience, Instructor: Dr. Farid Karimipour
- Fall 2008 Teaching Assistant, Department of Surveying and Geomatics Engineering, University of Isfahan, Isfahan, Iran
- Least Square and Error Adjustment, Dr. Jamal Asgari

## Industrial Experience

- March 2012- July 2013 Part-time GIS Specialist, Afraz Naghshe Arya consulting Eng. Co., Isfahan, Iran
- Experienced performing complex spatial modeling and analysis projects.

## TRAINING WORKSHOPS / CERTIFICATES

- 2014-now Certificate in College Teaching (CCT), University of Colorado Boulder Graduate Teacher Program (<https://www.colorado.edu/gtp/>)
- 2018-Mar The 2018 Esri Developer Summit, March 6-9, Palm Springs, California (Participating in various workshops such as ArcGIS Pro, Python, ArcGIS Pro SDK for .NET, ArcGIS Online, ArcGIS API for Python, WebGIS)
- 2018-Feb Google Earth Engine Workshop, February 26, Google, Boulder, Colorado
- 2017- Aug Amazon Web Services training, Earth Lab, Boulder, Colorado
- 2017- Aug RMACC High Performance Computing Symposium, August 15-17, Boulder, Colorado
- 2016- Jan Basics of Supercomputing Bootcamp on January 9-10, 2017  
<https://www.rc.colorado.edu/meetings/basicsofsupercomputing2017>
- 2015 & 2016 ESRI Online Certifications:

	<ul style="list-style-type: none"> <li>▪ Basics of Python (May 12th, 2015)</li> <li>▪ Python Scripting for Geoprocessing Workflows (May 13th, 2015)</li> <li>▪ Terrain Analysis Using ArcGIS Pro (Sep 20th, 2015)</li> <li>▪ Distance Analysis Using ArcGIS (Oct 9th, 2015)</li> <li>▪ Getting Started with Cartographic Representations (Oct 1th, 2016)</li> <li>▪ 3D Analysis of Surfaces and Features Using ArcGIS (Oct 4th, 2016)</li> </ul>
2016-Jul	ESCO DEM Building Workshop, July 21-22, Boulder, Colorado
2014 & 2015	Colorado Learning and Teaching with Technology 2014 Conference, Boulder, Colorado
	Colorado Learning and Teaching with Technology 2015 Conference, Boulder, Colorado
2015-Jul	2015 Esri International User Conference, July 20-24, San Diego, California (Participating in various workshops such as 3D Analysis, Arcpy, ArcGIS Pro, Geostatistical analysis, Data Visualization)
2015-Aug	RMACC High Performance Computing Symposium, August 15-17, Boulder, Colorado
2015-Jan	Software Carpentry, Institute of Arctic and Alpine Research (INSTAAR), Jan 7-9, Boulder, Colorado ( <a href="http://geocarpentry.github.io/2015-01-07-instaar/">http://geocarpentry.github.io/2015-01-07-instaar/</a> )

## TECHNICAL SKILLS

Mother tongue(s)	Farsi (Persian)
Other language(s)	English

Technical skills	<ul style="list-style-type: none"> <li>▪ GIS: ArcGIS (4), QGIS (2)</li> </ul>
Proficiency (1:lowest, 5:highest)	<ul style="list-style-type: none"> <li>▪ Programming languages: C++ (2), C# (2), Matlab (3), Python (3), R (2), Java script (1).</li> <li>▪ Cloud Computing: Google Earth Engine API (1), Amazon Web Services (1), Docker (1), ArcGIS Enterprise in the Amazon Cloud (2).</li> <li>▪ Operating Systems: Windows (4), Mac (3).</li> <li>▪ Web server/web design: ArcGIS Online (3), Apache (2), HTML (2), CSS (2), XML (2), GeoServer (1), WordPress, Desktop Server (2)</li> <li>▪ Software tools: Microsoft Office (4), Endnote (4).</li> <li>▪ Version Control System: Git (3), GitHub (3)</li> <li>▪ Graphic Packages: Adobe Photoshop (2). Sketchup (2)</li> <li>▪ Database: SQL Server (1), Oracle (1).</li> <li>▪ Autodesk: AutoCAD (2), AutoCAD Civil 3D (1).</li> <li>▪ Surveying, Trimble GPS units (3), Leica total stations (3), Leica GPS System (3)</li> </ul>

Sport	<ul style="list-style-type: none"> <li>▪ Former professional Taekwondo athlete for more than 8 years; Participant at many high level national Taekwondo competitions; Achieving more than ten medals at national Iranian competitions (Getting the first degree in 1998 and the last in 2008). Currently I am a rock climber!</li> </ul>
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## SELECTED GRADUATE COURSES

- GIS: Modeling Applications
- GIS Programming
- Quantitative Methods in Geography
- Remote Sensing
- Artificial Intelligence
- Digital Terrain Modeling
- Land Information System
- Advanced Programming (C++)
- GIS Seminar
- Research Design
- Advanced Geospatial Information Systems
- Computational Geometry
- Spatial Database
- Web GIS
- Location Base Service
- Spatial Data Science and Applications

## MEMBERSHIPS

- International Cartographic Association (ICA) (2016-2017)
- Community Surface Dynamics Modeling System (CSDMS)
- American Society for Photogrammetry and Remote Sensing (ASPRS) (2016, 2017, 2018)
- The professional land surveyors of Colorado (PLSC) (2016)
- GIS Colorado (GISCO) (2016-2017)
- American Geophysical Union (AGU) (2016)
- The Rocky Mountain chapter of the Urban and Regional Information Systems Association (RM-URISA) (2016)
- National Cartographic Center of Iran (2008-2013)
- ICA Commission on Map Projections, Generalisation and Multiple representation

## REFEREE/ REVIEWER/ VOLUNTEERING

- Judge projects for the 2018 GLOBE International Virtual Science Symposium (<https://www.globe.gov/>)
- Member of GIS Colorado scholarship committee (Sandy Malesky, Chair, [smalesky@cityofwestminster.us](mailto:smalesky@cityofwestminster.us)) (2017, 2018)
- GeoMentor (AAG-Esri ConnectED GeoMentors Program) (2017, 2018)
- GPS Site Manager, University of Isfahan.
  - Maintained and troubleshooted GPS permanent station
  - Designed a website for the GPS permanent station using CSharp and ASP
  - Analysed GPS data using Leica GNSS Spider Software

## REFERENCES

Prof. Barbara P.  
Buttenfield

Professor, Dep. Of Geography, University of Colorado at Boulder  
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- Dr. Stefan Leyk Associate Professor, Dep. Of Geography, University of Colorado at Boulder  
Email: [stefan.leyk@colorado.edu](mailto:stefan.leyk@colorado.edu)
- Dr. Carson Farmer Assistant Professor, Dep. Of Geography, University of Colorado at Boulder  
Email: [carson.farmer@colorado.edu](mailto:carson.farmer@colorado.edu)
- Dr. Abbass Bazeghi Architect and cartographer, Santa Barbara, California  
Phone (Cell): +1 (805)4517807, Email: [equalareamaps@gmail.com](mailto:equalareamaps@gmail.com)
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Documents and further information are available upon request