Curriculum Vitae (Jan 1st, 2019)

Mehran Ghandehari

1475 Folsom St., Apt. 3036, Boulder, Colorado, 80302

+1 (720) 476 - 0884

mehran.ghandehari@colorado.edu

https://mehran.netlify.com & www.github.com/mehran66 & www.linkedin.com/in/mehran-ghandehari

Google Scholar Profile

Sex male | Date of birth 19/12/1987 | Marital status Married

CURRENT ACIVITY GIS Engineer at Medici Land Governance, a subsidiary of Overstock.com.

EDUCATION

2014-2018 **Ph.D.**
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. Buttenfield
- 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

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*, Accepted

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, Meridian Lab, University of Colorado Boulder

- 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, Daneshpajoohan 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:

- Basics of Python (May 12th, 2015)
- Python Scripting for Geoprocessing Workflows (May 13th, 2015)
- Terrain Analysis Using ArcGIS Pro (Sep 20th, 2015)
- Distance Analysis Using ArcGIS (Oct 9th, 2015)
- Getting Started with Cartographic Representations (Oct 1th, 2016)
- 3D Analysis of Surfaces and Features Using ArcGIS (Oct 4th, 2016)

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 (http://geocarpentry.github.io/2015-01-07-instaar/)

TECHNICAL SKILLS

Mother tongue(s) Farsi (Persian)

Other language(s) English

Technical skills Proficiency (1:lowest, 5:highest)

- GIS: ArcGIS (4), QGIS (2), Saga GIS (2), GRASS GIS (2)
- Programming languages: C++ (2), C# (2), Matlab (3), Python (3), R (2), Java script (1).
- Cloud Computing: Google Earth Engine API (1), Amazon Web Services (1), Docker (1), ArcGIS Enterprise in the Amazon Cloud (2).
- Operating Systems: Windows (4), Mac (3), Linux (2).
- Web server/web design: ArcGIS Online (3), Apache (2), HTML (2), CSS (2), XML (2), GeoServer (1), WordPress, Desktop Server (2)
- Software tools: Microsoft Office (4), Endnote (4).
- Version Control System: Git (3), GitHub (3)
- Graphic Packages: Adobe Photoshop (2). Sketchup (2)
- Database: SQL Server (1), Oracle (1).
- Autodesk: AutoCAD (2), AutoCAD Civil 3D (1).
- Surveying, Trimble GPS units (3), Leica total stations (3), Leica GPS System (3)

Sport

- 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!

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) (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
Phone (Cell): +1 (303)4923618, Email: babs@colorado.edu

Dr. Stefan Leyk — Associate Professor, Dep. Of Geography, University of Colorado at Boulder
Email: stefan.leyk@colorado.edu

Dr. Carson Farmer — Assistant Professor, Dep. Of Geography, University of Colorado at Boulder
Email: carson.farmer@colorado.edu

Documents and further information are available upon request