Ebrahim Ghaderpour

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Degrees

2013-2017 Doctor of Philosophy, Earth and Space Science and Engineering,
York University, Toronto, ON, Canada **GPA:** 4.00/4.00

2010-2013 Doctor of Philosophy, Theoretical and Computational Science,
University of Lethbridge, Lethbridge, AB, Canada **GPA:** 4.00/4.00

2007-2010 Master of Science, Pure Mathematics,
Isfahan University of Technology, Isfahan, Iran **GPA:** 88.4%

2003-2007 Bachelor of Science, Applied Mathematics,
University of Isfahan, Isfahan, Iran **GPA:** 86.85%

Distinctions and Awards

- Postdoctoral scholarship from Pacific Institute for the Mathematical Sciences
- Best paper award in geodesy from the Canadian Geophysical Union
- Best presentation award from York University
- Top student at University of Lethbridge and York University every semester
- On the dean's honor list every semester at Isfahan University of Technology and University of Isfahan
- York research scholarship and awards from York University
- Advantage award and admission award from University of Lethbridge

Teaching certificate

September 2016 Instructional skills workshop, The Educational Development Unit, Taylor Institute for Teaching and Learning, University of Calgary, Calgary, AB, Canada

Work Experience

- Seasonal Instructor at University of Calgary, Calgary, AB, Canada, September 2016-present
- Postdoctoral Scholar at Department of Mathematics and Statistics, University of Calgary, Calgary, AB, Canada, July 2016-present
- Software developer at Farmers Edge company (part-time remote worker), Lethbridge, AB, Canada, May 2016- present
- Research and Teaching Assistant at Department of Earth and Space Science, York University, Toronto, ON, Canada, September 2013-July 2016
- Tutor at Tutor Doctor, October 2015-July 2016
- Research and Teaching Assistant at Department of Mathematics and Computer Science, University of Lethbridge, Lethbridge, AB, Canada, September 2010-September 2013

- Lecturer at Azad University of Najaf-Abad and Tiran, Isfahan, Iran, January 2010-May 2010

Research Experience

- Collaborating with Drs. Wenyuan Liao, Michael Lamoureux and Cristian Rios (Mathematics Professors at the Department of Mathematics and Statistics, University of Calgary) on signal and image processing with its applications in seismology (seismic data regularization and random noise attenuation)
- Developed python scripts for zoning rebuild, fertilizer calculation, detection of clouds and shadows from satellite imagery and virtual soil test adjustment for Farmers Edge
- Worked under the direction of Dr. Spiros Pagiatakis (Geomatics Professor and associate dean research and graduate studies at Lassonde School of Engineering, York University) on the least-squares wavelet analysis (a new method of analyzing unequally spaced and non-stationary time series) and its applications on seismic data, very long baseline interferometry, superconductive gravimeter data and electrostatic gradiometer measurements
- Worked under the supervision of Dr. Hadi Kharaghani (Mathematics Professor and dean of the Department of Mathematics and Computer Science at University of Lethbridge) on orthogonal designs and Hadamard matrices that have applications in coding theory, wireless networking, and communications
- Collaborated with Dr. Dave Morris (Mathematics Professor at University of Lethbridge) on graph theory that has applications in intelligent transportation systems, road networks, and social media

Computer skills

MATLAB; Python; C++; Maple; Excel; Latex; PowerPoint; Word

Software Development

- Developed a code for the anti-leakage least-squares spectral analysis and seismic trace interpolation (~1000 lines of code in MATLAB)
- Developed a software for classification (zone management for farms, ~2000 lines of code in Python)
- Developed a software for cloud and shadow detection for RapidEye and Landsat images (~800 lines of code in Python)
- Developed a software in Python for fertilizer calculation (~1500 lines of code in Python)
- Developed a software and designed a graphical user interface for signal processing (~4000 lines of code in C++ and MATLAB)
- Developed a software for factoring polynomials over real numbers and for positioning and the principal component analysis for ArcGIS (~2000 lines of code in Python)
- Developed a software and designed a graphical user interface for multi-navigation satellite system constellation simulator for positioning and planning purposes (~5000 lines of code in MATLAB)
- Developed a library for orthogonal designs and Hadamard matrices (~3000 lines of code in Maple)

Teaching Experience

Winter 2017 **Seasonal Instructor at University of Calgary** (Calgary, AB, Canada)

Course Title: Multivariable Calculus for Engineers and Scientists (MATH 277)

- Prepared lectures for a class of 192 students
- Tutorial lab sessions
- Helped with setting up the exams

Fall 2016 **Seasonal Instructor at University of Calgary** (Calgary, AB, Canada)
Course Title: Calculus for Engineers and Scientists (MATH 275)
- Prepared lectures for a class of 219 students
- Tutorial lab sessions
- Helped with setting up the exams

2015-2016 **Tutor at Tutor Doctor:** Mathematics, Statistics, Physics, and Chemistry

Winter 2016 **Teaching Assistant at York University** (Toronto, ON, Canada)
Course Title: Electricity, Magnetism, and Optics for Engineers (PHYS 1801)
- Set up exams
- Prepare instruments and help students to do experiments
- Mark reports

Winter 2016 **Teaching Assistant at York University** (Toronto, ON, Canada)
Course Title: Earth Environment (ESSE 1012)
- Organize lab sessions
- Mark exams and assignments

2014-2015 **Teaching Assistant at York University** (Toronto, ON, Canada)
Course Titles: Adjustment Calculus (LE/ESSE 3620) and Analysis of Overdetermined System (LE/ESSE 3630)
- Prepared lectures and taught parts of the courses as a guest lecturer
- Organized lab sessions and helped students on their assignments
- Prepared quizzes for students and marked them as part of their course work
- Marked assignments

Winter 2014 **Teaching Assistant at York University** (Toronto, ON, Canada)
Course Title: Continuum Mechanics (LE/EATS 2470)
- Taught the solutions for students' assignments
- Conducted labs for the instrumental experience
- Marked assignments

Fall 2013 & 2014 **Teaching Assistant at York University** (Toronto, ON, Canada)
Course Title: The Dynamic Earth and Space Geodesy (SC/EATS 1010)
- Grouped students for GPS surveying
- Tutored and guided students in their assignments
- Marked assignments

Summer 2014 **Teaching Assistant at York University** (Toronto, ON, Canada)
Course Title: The History of Astronomy (SC/NATS 1745)
- Graded online assignments and projects

2012-2013 **Teaching Assistant at University of Lethbridge** (Lethbridge, AB, Canada)
Course Title: Linear Algebra (Math 1410)
- Marked midterm and final exams with the course instructor
- Counselled students experiencing difficulties in the course

2011-2013 **Teaching Assistant at University of Lethbridge** (Lethbridge, AB, Canada)
General lab sessions
- Tutored students in the lab sessions a number of courses such as Calculus, Statistics, Linear Algebra, Differential Equation, Algebra and Analysis

2010-2011 **Teaching Assistant at University of Lethbridge** (Lethbridge, AB, Canada)
Course Titles: Differential Equations I (Math 3600) and Analysis I (Math 3500)
Marked assignments

Winter 2010 **Instructor at Azad University of Najaf-Abad** (Najaf-Abad, Isfahan, Iran)

Course Title: Differential Equations
- Prepared lectures and exams for classes of 90 students

Winter 2010 **Instructor at Azad University of Tiran** (Tiran, Isfahan, Iran)
Course Title: Calculus
- Prepared lectures and exams for classes of around 50 students

Selected Course Works

Advanced Algebra; Advanced Optimal Estimation Theory and Applications; Advanced Satellite Positioning; Algebra; Algebraic Topology; Analysis; Calculus; Combinatorics; Computational Algebra and Number Theory; Computer Programming; Differential Equations; Discrete Mathematics; Equations with Partial Derivatives; Field Theory; Fourier Analysis; Functional, Real, Complex, and Harmonic Analyses; Geodesy; Geographical Information Systems and Spatial Analysis; Graph Theory; Numerical Analysis; Operations Research; Physics; Photogrammetry; Remote Sensing of the Atmosphere; Statistics and Probability; Stochastic Process; Differential Equations; Times Series; Topics in Design Theory

Public Presentations

- Anti-leakage least-squares spectral analysis for data regularization, Geoconvention, Calgary, AB, Canada (May 2017)
- Anti-leakage least-squares spectral analysis for data regularization, Consortium for Research in Elastic Wave Exploration Seismology (CREWES), University of Calgary, Calgary, AB, Canada (March 2017)
- Least-squares wavelet analysis and its applications, The 38th Annual Meeting of Alberta Statisticians, University of Alberta, Edmonton, AB, Canada (October 2016)
- Least-squares wavelet analysis and its applications (poster), International Union of Geodesy and Geophysics Prague, Czech Republic (June 2015)
- Least-squares wavelet analysis and stochastic surfaces in the least-squares wavelet analysis (oral), Canadian Geophysical Union, Montreal, Canada (May 2015)
- Signed group orthogonal designs and their applications (oral), Workshop on Algebraic Design Theory and Hadamard Matrices, University of Lethbridge, Canada (July 2014)
- The asymptotic existence of orthogonal design (oral), Number Theory and Combinatorics, University of Lethbridge, Canada (2013)
- Bounds for systems of lines (oral), University of Lethbridge, Canada (2012)

Publications

- Ghaderpour E, Pagiatakis S, Ince S (2017) Least-squares cross-wavelet analysis and its applications in geophysical time series. Under review, J Geodesy
- Ghaderpour E, Liao W, Lamoureux M (2017) Anti-leakage least-squares spectral analysis for seismic data regularization and random noise attenuation. Under review after revision, Geophysics
- Ghaderpour E, Pagiatakis S (2017) Least-squares wavelet analysis of unequally spaced and non-stationary time series and its applications, Math Geosci, doi: 10.1007/s11004-017-9691-0
- Ghaderpour E (2016) Some equal-area, conformal and conventional map projections: a tutorial review. J Appl Geodesy pp. 13

- Ghaderpour E (2015) Constructions for orthogonal designs using signed group orthogonal designs. Under review after revision, Discrete Math
- Ghaderpour E (2016) Some non-existence and asymptotic existence results for weighing matrices. Int J Comb pp. 6
- Ghaderpour E (2015) Some constructions for amicable orthogonal designs. Australas J Combin (63) 374-381
- Ghaderpour E (2015) Signed group orthogonal designs and their applications. Algebraic Design Theory and Hadamard Matrices, Springer Proc Math Stat
- Ghaderpour E, Kharaghani H (2014) The asymptotic existence of orthogonal designs. Australas J Combin (58) 333-346
- Ghaderpour E (2013) Asymptotic existence of orthogonal designs. Thesis (Ph.D.), University of Lethbridge (Canada) pp. 121
- Ghaderpour E, Morris D (2013) Cayley graphs on nilpotent groups with cyclic commutator subgroup are Hamiltonian. Ars Math Contemp no. 1(7) 55–72
- Ghaderpour E, Morris D (2012) Cayley graphs of order 30p are Hamiltonian. Discrete Math 312 no. 24 3614–3625
- Ghaderpour E, Morris D (2011) Cayley graphs of order 27p are Hamiltonian. Int J Comb pp. 16

Reviewer: IEEE Transactions on Signal Processing, Journal of GPS, Asian Journal of Mathematics and Computer Research

Other Skills (Hobbies)

Bodybuilding; Repairing vehicles & electronic devices; Photography; Painting; Soccer