

# EHSAN KAMALINEJAD

## Curriculum Vitae

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### CONTACT INFORMATION

CSU East Bay, Department of Mathematics & Computer Science, CA, USA.  
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### POSITIONS

- *Assistant Professor* at Cal State University, East Bay.
  - *Senior Machine Learning Consultant* at Apple Inc.
  - *Co-Founder* at [www.xoosha.com](http://www.xoosha.com)
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### EDUCATION

- 2011 — *PhD in Applied Mathematics*  
University of Toronto, Toronto, Canada.  
*Thesis: An Optimal Transport Approach to Nonlinear Evolution Equations.*  
Supervisor: Almut Burchard
  - 2005 — *BSc in Mathematics*  
Shahid Beheshti University, Tehran, Iran.
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### AREAS OF INTERESTS

Optimization, Deep Learning, Machine Learning, PDEs.

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### PUBLICATIONS

- E. Kamalinejad, *Visual Similarity through Assisted Invariant Deep Features*, work in progress.
- D. Haley, E. Kamalinejad, F. Zhong, *IsoClustering: A Generalized Framework for Local Data Clustering*, submitted, 2018.
- E. Kamalinejad, *Well-posedness of Wasserstein Gradient Flow Solutions of Higher Order Evolution Equations*, *Calculus of Variations and Partial Differential Equations* 52 (3-4), 547-564, 2015.
- E. Kamalinejad and A. Moradifam, *Radial Symmetry of Large Solutions of Semi-linear Elliptic Equations with Advection*, *Proceedings A of the RSE*, 144A, 139-147, 2014.

- K. Costello, E. Kamalinejad, T. Laurent, *Sparsification for Total Variation Clustering*, Presented at AMS Conference on Computational Problems on Large Graphs and Applications on 2013.
- S. AlNabulsiy, E. Kamalinejad, J. Meskasx, J. Wang, K. Yink, J. Downton, *Azimuthal Elastic Inversion for Fracture Characterization*, IMA Preprint Series # 2399, 2012.
- Ehsan Kamalinejad, *An Optimal Transport Approach to Nonlinear Evolution Equations*, PhD Thesis, Department of Mathematics, University of Toronto, Canada, 2012.
- Ehsan Kamalinejad, *Analysis of Natural Framing of Knots*, MSc Thesis, Department of Mathematics, Shahid Beheshti University, 2007.

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## TALKS

*Geometric Spectral Clustering*

REU/FURST Workshop, Fresno State University, California, US, 2017.

*Sparsification for Total Variation Clustering*

AMS Sectional Meeting, Special Session, UCR, California, US, 2013.

*Well-posedness of Parabolic Equations via Optimal Transport Methods*

Applied Math Seminar, Stanford University, California, US, 2012.

*Gradient Flow Methods for Thin-Film and Related Higher Order Equations*

The Canadian Mathematical Society Meeting, Toronto, Canada, 2011.

*Wasserstein Gradient Flow Approach to Non-linear Higher Order Evolution Equations*

Prairie Analysis Seminar, Manhattan, US, 2011.

*Optimal Transport Methods for Solving Non-linear Evolution Equations*

Fields Analysis Working Group, Toronto, Canada, 2011.

*Image Segmentation Using Mumford-Shah Functional*

CoolStuff Seminar, University of Toronto, Toronto, Canada, 2009.

*Isoperimetric Inequality on Riemannian Manifolds*

CoolStuff Seminar, University of Toronto, Toronto, Canada, 2009.

*Minkowski Space-Time and Special Relativity*

Shahid Beheshti University, Tehran, Iran, 2005.

*Multi Focus Image Enhancement*

IPM: Institute for studies in Theoretical Physics and Mathematics, Tehran, Iran, 2004.

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## TEACHINGS

Statistical Learning & Data Analysis CS6831, Math & CS grad students, CSUEB.

Mathematical Modeling, Math6865, Math grad students, CSUEB.

Theory of functions of real Variables, Math6349, Math grad students, CSUEB.

Numerical Analysis MATH4750, Math students, CSUEB.

Partial Differential Equations MATH4361, Math & Physics students, CSUEB.

Differential Equations MATH3361, Math students, CSUEB.

Analysis II, Math 3300, Math & Economy & Physics students, CSUEB.

Analysis I, Math 3300, Math & Economy & Physics students, CSUEB.

Intro to Abstract Math and Proofs MATH3000, Math students, CSUEB.

Calculus MATH1305, Science & Engineering students, CSUEB.

Calculus MATH1304, Science & Engineering students, CSUEB.

Optimization MATH120, Science & Engineering students, UCR.

Calculus MATH9B, Science & Engineering students, UCR.

Discrete Structures MATH011, Science & Engineering students, UCR.

Differential Equations MATH46, Science & Engineering students, UCR.

Pre-calculus MATH8B, Science students, UCR.

Multivariable Calculus MAT235, Science students, University of Toronto.

High school Math Olympiad preparation classes, Besat institute.

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## RELATED WORK & HONORS

–*A2E2 grant \$69,122,00*, CSU East Bay, 2017.

The A2E2 grant is granted for a collaboration between mathematics and engineering departments for data visualizations in virtual reality.

–*NSF grant 1620500, \$35,000.00*, CSU East Bay, 2016.

The Faculty and Undergraduate Research Student Teams program brings together small research groups comprised of undergraduate students and faculty from primarily undergraduate institutions in order to provide them with a year-long research.

–*Visiting Scholar*, Stanford University, US, 2012.

Collaborated with Dr. Yanir Rubinstein in teaching and conducting research on the subject of Optimal Transport at Stanford university.

–*IMA Industrial Project*, University of Calgary, Canada, 2011.

With a group of 5 grad students under supervision of Dr. Jon Downton (from Hampson-Russell Software & Services), studied the problem of characterizing fractures of the earth based on the seismic data. We used a hybrid method combining a gradient flow with a simulated annealing to address this industrial problem.

–*Doctoral Completion Award*, 10,000 \$, University of Toronto, Ontario, Canada, 2011.

–*Vision Group*, Institute for studies in Theoretical Physics and Mathematics, Tehran, 2007.

Did a research project on image segmentation, under supervision of Prof. Shahshahani.

–*Visual Cryptography Group*, Shahid Beheshti University, Tehran, Iran, 2005.

Did a research project on a class of combinatorial methods for encrypting visual data, under supervision of Prof. Hajiabolhassan which lead into an application for implementing cryptography using visual probabilistic methods.

–*Math Competitions*, was a member of Shahid Beheshti University undergrad national Math competition in years 2004 and 2005.

–*Physics Competitions*, advanced to the semi final of national high school Physics Olympiad in 2002.

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## WORKSHOPS

*FURST summer research camp*, Fresno State University, US, 2017.

*IMA Math Modeling in industry*, University of Calgary, Canada, 2012.

*The CMS Winter Meeting*, Delta Chelsea Hotel, Toronto, Canada, 2011.

*Prairie Analysis Seminar*, Manhattan, Kansas, US, 2011.

*SMS 50th Summer School on Metric Spaces: Geometric and Analytic Aspects*, Université de Montréal, Montreal, Canada, 2011.

*PIMS Partial Differential Equations Summer School*, University of British Columbia, Vancouver, Canada, 2009.

*International Workshop on Non-commutative Geometry*, IPM: Institute for Studies in Theoretical Physics and Mathematics, Tehran, Iran, 2005.

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## COMPUTER SKILLS

Python

PyTorch

TensorFlow

Matlab

Mathematica

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## REFERENCES

Julie Glass, CSU East Bay, (510) 885-3434, julie.glass@csueastbay.edu

Julia Olkin, CSU East Bay, (510)-885-7487, julia.olkin@csueastbay.edu

Almut Burchard, University of Toronto, (416)-978-4174, almut@math.utoronto.ca