EHSAN GANJIDOOST

COMPUTER SCIENTIST · NEURAL NETWORK & MACHINE LEARNING SCIENTIST

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Summary of Qualifications

- Honored with many Academic and Provincial **Awards**.
- Ranked among **top 5** in **MLSP 2014, Kaggle** competition on schizophernia classification challenge.
- **3rd rank** in the Computational Mathematics program of **University of Waterloo**.
- Received **several certificates** from the Coursera in **Computer Science**, and **Finance**.
- **Solid knowledge** at *AI, DeepLearning, Machine Learning*, and Optimization.
- **Teaching Assistant** in Intro to AI, Neural Networks, Computational Linear Algebra, Numerical Computation, etc.
- **NSERC nominee** proposal from the University of Waterloo in 2017.
- **Volunteering for a Charity** by producing several advertisment videos.

Education

University of Waterloo   *Waterloo, Canada*
PH.D. IN COMPUTER SCIENCE   *Sep. 2016 - present*
- Thesis: Predictive Estimators and Perceptual Feedback Networks

University of Waterloo   *Waterloo, Canada*
MMATH. IN COMPUTATIONAL MATHEMATICS   *Sep. 2014 - Aug. 2015*
- Thesis: On Preconditioning the Linearized Conjugate Gradient method for Sparse Nonlinear Optimization.

Iran University of Science & Technology   *Tehran, Iran*
M.SC. IN COMPUTER ENGINEERING   *Sep. 2002 - Mar. 2005*
- Thesis: Study of Cache Structure and its Impact on the Performance of Network Processors

Shahid Beheshti University   *Tehran, Iran*
B.SC. IN COMPUTER ENGINEERING   *Sep. 1997 - Mar. 2002*
- Thesis: Wireless Client/server System

Certificates (short-listed)

AI & Machine Learnin	Machine Learning, DeepLearning Specialization, NLP Specialization, Tensorflow
Computer Science	Algorithm Design I & II, Intro to Databases, mongoDB
Finance	WatRISQ, Corporate Finance, Finance, Financial Accounting
Teaching	Fundamentals of University Teaching, Certificate in University Teaching

Professional Technical Skills

Advanced Programming	Python, MATLAB, R, C/C++, Java, JavaScript, Node.js, Processing, Gephi, OWL, HTML, LaTeX, Jekyll,
Most Used Packages	Numpy, Scikit-learn, Pandas, PyViz, PyTorch, Tensorflow, Keras, Jax, Matplotlib
Database	SQL, DTD, XML, XSD, XQuery, XSLT, UML, OLAP, JSON, mongoDB
IDE, Editor	PyCharm, IPython, Colab, Sublime, Atom, CodeVisionAVR

Projects (short-listed)

Unsupervised Models	AE, VAE, GAN, Predictive Coding, Recommender system
Supervised Models	**CNNs** (LeNet, AlexNet, VGGNet, ResNet, Inception)
Sequence Models	**RNNs** (LSTM, GRU), Time Series
Optimization	fleet scheduling
Finance	portfolio optimizer package

Research Experience

Neurocognitive Computing Lab
GRADUATE RESEARCHER

Waterloo, ON
Sep. 2016 - present

- Generative Predictive Coding.
- Portfolio optimizer
- Neural Network Platform with Spiking Neurons.
- Neural Network based on real-time, Dynamical System.

University of Waterloo
RESEARCH ASSISTANT & DEVELOPER

Waterloo, ON
May. 2014 - Sep. 2016

- Nonlinear optimization solver.
- Large-scale continuous optimization solver.
- TSP heuristic using edge elimination techniques.

Cayuga Research
RESEARCHER

Waterloo, ON
May. 2014 - Sep. 2014

- Logistic & Transportation Allocation.

ITRC
RESEARCH ASSISTANT

Tehran, Iran
Mar. 2004 - Mar. 2005

- Network processor architecture.

R&D Experience

Marsuscom co.
COMPUTER ENGINEER

Tehran, Iran
Nov. 2009 - Sep. 2011

- System & Code Developer.
- Smart Home Control System Developer.

PARMAN
TECHNICAL PROGRAMM

Tehran, Iran
Jun. 2009 - Nov. 2009

- Fiber Optic Network TX/RX STM-1 test and verification engineer.

PARSTEL Telecom co.
COMPUTER ENGINEER

Tehran, Iran
Jun. 2007 - Jun. 2009

- Code Developer for STN-10K Switch.
- Hardware designer and embedded programmer for line card.

VESAL co. ISP
COMPUTER ENGINEER INTERN

Tehran, Iran
Jun. 2000 - Sep. 2000

- Computer Networking.
- Design, Implement and troubleshooting network.

Academic Activities

PUBLICATIONS

2020	**Ganjidoost E.,** "Capturing Variations on Generative Predictive Coding"	*pending NeurIPS*
2019	**Ganjidoost E.,** "Notes on Neural Networks Part 3: Credit Assignment Problem"	*under review*
2019	**Ganjidoost E.,** "Notes on Neural Networks Part 2: Biological Adaptive Neural Networks"	*under review*
2019	**Ganjidoost E.,** "Notes on Neural Networks Part 1: Artificial Neural Networks"	*under review*
2017	**Ganjidoost E.,** Orchard J.,"Non-linear mapping in a neural network using predictive coding" (research paper)	*UofW*
2017	**Ganjidoost E.,** Orchard J.,"Predictive coding framed with neuron engineering framework" (research paper)	*UofW*
2005	**Ganjidoost E.,** Akbari A.,"Impact of cache structure on network processor performance" (oral)	*CESC*
2004	**Ganjidoost E.,** Gharegouzi A., Akbari A., "Improvement speech quality by noise detection and elimination using averaged algorithm" (research paper)	*IUST*
2003	**Ganjidoost E.,** Fathy M., "Computer Architecture, A Quantitative Aproach - Memory Hierarchy Design" (translation)	*IUST*

Presentation

Win 2020	**"Pandas' Essential Tutorial"**, @ Neurocomgnitive Computing Lab	*Waterloo, ON*
Win. 2020	**"On Predictive Coding"**, @ Neurocomgnitive Computing Lab	*Waterloo, ON*
Spr. 2019	**"Generative Neural Networks"**, @ The 12th Annual Ottawa Mathematics Conference (OMC)	*Waterloo, ON*
Apr. 2005	**"Impact of Cache Structure on Network Processor Performance"**, @ The 7th Computer Engineering Student Conference (CESC)	*Tehran, Iran*
Apr. 2004	**"Ad-hoc Network Architecture"**, @ IUST, Grad Seminar Series	*Tehran, Iran*
Apr. 2003	**"Rollback Recovery Policy in Operating System"**, @ IUST, Grad Seminar Series	*Tehran, Iran*
Dec. 2003	**"Computer Networks Performance Modeling"**, @ IUST, Grad Seminar Series	*Tehran, Iran*

Awards & Recognitions

Institutional, Academic

2016-20	**Recepient**, Math Domestic Graduate Student Award ($20,000)	*Waterloo, ON*
2017-18	**Recepient**, Walter Metzger Memorial Award ($5,250)	*Waterloo, ON*
2016-17	**Recepient**, University of Waterloo Graduate Scholarship ($5,000)	*Waterloo, ON*
2015-20	**Recepient**, UW Graduate Research Studentship ($26,500)	*Waterloo, ON*
2014-15	**Recepient**, UW Math Faculty Graduate Award ($6,000)	*Waterloo, ON*
2014-15	**Recepient**, UW Mathematics Graduate Experience Award ($3,000)	*Waterloo, ON*

Provinsional, Leadership

2007	**Recepient**, Tehran City Council Award (Gold prize)	*Tehran, Iran*

National, Academic

2016-17	**Selected**, University of Waterloo's NSERC nominiee	*Waterloo, ON*
2002	**Top 0.1%**, National Enterance Exam for Grad School	*Tehran, Iran*
1997	**Top 0.1%**, National Enterance Exam	*Tehran, Iran*
1996	**2nd round**, National Computer & Mathematic Olympiad	*Tehran, Iran*

Extracurricular Activity

NAMA co. - startup · *Tehran, Iran*
Co-Founder & Video Editor · *Jun. 2003 - Sep. 2007*
- Documentary producer, video editor.
- Teaser producer for Advertisment.

Imam Hadi Charity. · *Tehran, Iran*
Volunteer Video Editor · *Jun. 2003 - Sep. 2003*
- Video production process usig speciall effects, video edditing, and producing documentary.

Soroush High School. · *Tehran, Iran*
Instructor and Trainer · *Sep. 1997 - Sep. 2003*
- Teaching Fundamental of Computer Programming.
- Teaching Video Editing in Summer School.

Hobbies

Sport Activities	swimming, soccer, ping-pong, biking, and hiking
Usual Habit	listening traditional/country music, watching (documentary/adventure/romance) movies.
To-Do list	photography, astronomy, traveling (specially road trip), driving Race cars