EHSAN GANJIDOOST

COMPUTER SCIENTIST · NEURAL NETWORK & MACHINE LEARNING SCIENTIST

200 University Ave W, Waterloo, ON N2L 3G1, Canada

(+1) 226-339-7712 | e.ganjidoost@gmail.com | eganji.github.io/iPage | eganji | ganjidoost | e.ganjidoost

Summary of Qualifications

- Honored with many Academic and Provincial **Awards**.
- Ranked among **top 5** in **MLSP 2014, Kaggle competition**.
- **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.
- **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.

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

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 nominie	*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*

Professional Technical Skills

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

Certificates (short-listed)

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

Projects (short-listed)

Deep Learning Arch.	PCNet, CNN, ResNet, AlexNet, LSTM, Recommender system, VAE, GAN
Finance	portfolio optimizer package

Educational Activities

University of Waterloo
Waterloo, Canada

Teaching Assistant — *Sep. 2016 - present*

CS 486/686: Introduction to AI	*W19, S19, F19, W20, S20*
CS 475/675: Computational Linear Algebra	*S18*
CS 489/689: Neural Networks	*W18*
CS 370: Numerical Computation	*F17, F18*
CS 240: Data Structure & Data Management	*S17*
CS 136: Algorithm Design & Data Abstraction	*W17*
CS 135: Designing Functional Programs	*F16*

University of Waterloo
Waterloo, Canada

Tutorial — *Sep. 2014 - May 2015*

Math 127: Calculus I for Science	*W15*
Math 115: Linear Algebra for Engineering	*F14*
Math 135: Algebra for Honor Math	*F14*

Research Experience

Neurocognitive Computing Lab
Waterloo, ON

GRADUATE RESEARCHER
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
Waterloo, ON

RESEARCH ASSISTANT & DEVELOPER
May. 2014 - Sep. 2016

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

Cayuga Research
Waterloo, ON

RESEARCHER
May. 2014 - Sep. 2014

- Logistic & Transportation Allocation.

ITRC
Tehran, Iran

RESEARCH ASSISTANT
Mar. 2004 - Mar. 2005

- Network processor architecture.

R&D Experience

Marsuscom co.
Tehran, Iran

COMPUTER ENGINEER
Nov. 2009 - Sep. 2011

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

PARMAN
Tehran, Iran

TECHNICAL PROGRAMM
Jun. 2009 - Nov. 2009

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

PARSTEL Telecom co.
Tehran, Iran

COMPUTER ENGINEER
Jun. 2007 - Jun. 2009

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

VESAL co. ISP
Tehran, Iran

COMPUTER ENGINEER INTERN
Jun. 2000 - Sep. 2000

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

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