

## Summary of Qualifications

- Honored with many Academic and Provincial **Awards**.
- Ranked among **top 5** in **MLSP 2014, Kaggle competition**.
- **3<sup>rd</sup> 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 advertisement videos.

## Education

### University of Waterloo

PH.D. IN COMPUTER SCIENCE

Waterloo, Canada

Sep. 2016 - present

- Thesis: Predictive Estimators and Perceptual Feedback Networks

### University of Waterloo

MMATH. IN COMPUTATIONAL MATHEMATICS

Waterloo, Canada

Sep. 2014 - Aug. 2015

- Thesis: On Preconditioning the Linearized Conjugate Gradient method for Sparse Nonlinear Optimization.

### University of Science & Technology

M.SC. IN COMPUTER ENGINEERING

Tehran, Iran

Sep. 2002 - Mar. 2005

- Thesis: Study of Cache Structure and its Impact on the Performance of Network Processors

### Shahid Beheshti University

B.SC. IN COMPUTER ENGINEERING

Tehran, Iran

Sep. 1997 - Mar. 2002

- Thesis: Wireless Client/server System

## Academic Activities

### PUBLICATIONS

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

### PRESENTATION

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

## Awards & Recognitions

### INSTITUTIONAL, ACADEMIC

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

### PROVINSIONAL, LEADERSHIP

|      |  |              |
|------|--|--------------|
| 2007 | <b>Receipient</b> , Tehran City Council Award (Gold prize) | Tehran, Iran |
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### NATIONAL, ACADEMIC

|         |   |              |
|---------|---|--------------|
| 2016-17 | <b>Selected</b> , University of Waterloo's NSERC nominie              | Waterloo, ON |
| 2002    | <b>Top 0.1%</b> , National Enterance Exam for Grad School             | Tehran, Iran |
| 1997    | <b>Top 0.1%</b> , National Enterance Exam                             | Tehran, Iran |
| 1996    | <b>2<sup>nd</sup> round</b> , National Computer & Mathematic Olympiad | Tehran, Iran |

## Professional Technical Skills

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

## Certificates (short-listed)

|                                 |   |
|---------------------------------|---|
| <b>AI &amp; Machine Learnin</b> | Machine Learning, DeepLearning.ai, Tensorflow                           |
| <b>Computer Science</b>         | Algorithm Design I & II, Intro to Databases, mongoDB                    |
| <b>Finance</b>                  | WatRISQ, Intro to Corporate Finance, Intro to Finance                   |
| <b>Teaching</b>                 | Fundamentals of University Teaching, Certificate in University Teaching |

## Projects (short-listed)

|                            |   |
|----------------------------|---|
| <b>Deep Learning Arch.</b> | PCNet, CNN, ResNet, AlexNet, LSTM, Recommender system, VAE, GAN |
| <b>Finance</b>             | 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

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

## Research Experience

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### 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

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### 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.

## Hobbies

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**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