EHSAN **GANJIDOOST**

PH.D. CANDIDATE IN COMPUTER SCIENCE · WITH SPECIALTY IN DEEP LEARNING & MACHINE LEARNING

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Summary of Qualifications

- Demonstrated **Solid knowledge** and **expertise** in *AI, Deep Learning, Machine Learning*, and *Optimization* through certificates, and doctoral research.
- Acquired analytical and critical thinking abilities through publishing papers, review papers, and grad studies.
- Achieved **3rd rank** in **MMath** in *Computational Mathematics*, and honored with several academic & provincial **awards**.
- Ranked among **top 5** in **MLSP 2014, Kaggle** machine learning challenge on schizophernia classification.
- Nominated for **NSERC research proposal** by the University of Waterloo in 2017.
- Communicated complex concepts and provided mentorship to students in several courses, either in person or through tutorial sessions, during my Ph.D. program.
- **Volunteered** in a Charity helping families with education and health.

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

Implemented Projects (short-listed)

Unsupervised Models	AE, VAE, GAN, Predictive Coding, Recommender system ⇝ main packages: numpy, tensorflow, keras
Supervised Models	**CNNs** (LeNet, AlexNet, VGGNet, ResNet, Inception) ⇝ main packages: nunmpy, tensorflow, keras
Sequence Models	**RNNs** (LSTM, GRU), Time Series ⇝ main packages: numpy, tensorflow, keras
Optimization	fleet scheduling (*Cayuga Research*), portfolio optimizer (*personal project*) ⇝ main packages: numpy, pandas

Relevant Experience

Neurocognitive Computing Lab — *Waterloo, ON*

DOCTORAL RESEARCHER — *Sep. 2016 - present*

- Designed & implemented predictive coding platform for generative model experiments.
- Implemented a neural network platform with spiking neurons using Nengo framework for class prediction experiments.
- Developed a neural network based on a real-time dynamical system for research on the compatible biological model.
- Collaborated with fellow researchers on testing symmetric predictive estimator on the Nengo framework.
- Invited to campus Correlation One Datathon working on Uber data from NYC in a team of four, May 2017.

University of Waterloo — *Waterloo, ON*

GRAD RESEARCHER & DEVELOPER — *May. 2014 - Sep. 2016*

- Developed a pre-conditioning method for nonlinear optimization solver.
- Implemented a large-scale continuous optimization solver using the coloring method.
- Developed TSP heuristic using edge elimination techniques to find the shortest path among given data points

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 Implementation

Certificates (short-listed)

AI & Machine Learnin Machine Learning, Deep Learning Specialization, NLP Specialization, Tensorflow

Computer Science Algorithm Design I & II, Intro to Databases, MongoDB

Additional Experience

NAMA co. - startup *Tehran, Iran*

Co-Founder & Video Editor *Jun. 2003 - Sep. 2007*

- Produced and edited videos for documentaries, a charity, and advertisements.

Imam Hadi Charity. *Tehran, Iran*

Volunteer Video Editor & Videographer *Jun. 2003 - Sep. 2003*

- Edited and managed video projects using adobe premiere, after effects, and Hollywood fx for producing teaser and video for the charity.

Soroush High School. *Tehran, Iran*

Instructor and Trainer *Sep. 1997 - Sep. 2003*

- Taught Fundamental of Computer Programming to prodigy high school students and mentored learners in video editing during the summer school.

Select Publications & Presentations

Publications

2020	**Ganjidoost E.**, "Capturing Variations on Generative Predictive Coding"	*pending NeurIPS*
2019	**Ganjidoost E.**, "On Artificial Neural Networks, Biological Adaptive Neural Networks, Credit Assignment Problem"	*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*

Presentation

Win. 2020	**"On Predictive Coding"**, @ Neurocomgnitive Computing Lab	*Waterloo, ON*
Spr. 2019	**"Generative Neural Networks"**, @ The 12th Annual Ottawa Mathematics Conference (OMC)	*Waterloo, ON*

Awards & Recognitions

2016-20	**Institutional, Academic**, Recepient of four Doctoral Awards (total $30.25k)	*Waterloo, ON*
2014-15	**Institutional, Academic**, Recepient of two Master of Mathematics Awards (total $9k)	*Waterloo, ON*
2007	**Provincial, Leadership**, Recepient of Tehran City Council Award (Gold prize)	*Tehran, Iran*
2016-17	**National, Academic**, Nominated for NSERC research proposal by the University of Waterloo.	*Waterloo, ON*
2002	**National, Academic**, Ranked Top 0.1% National Enterance Exam for Grad School	*Tehran, Iran*
1997	**National, Academic**, Ranked Top 0.1% National Enterance Exam	*Tehran, Iran*
1996	**National**, Nominated for the 2nd round of National Computer & Mathematic Olympiad	*Tehran, Iran*

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