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ALI SAHEB PASAND

*PhD Student at University of
Waterloo*

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Education

University of Waterloo, Waterloo, Canada

January 2020 - Now

PhD in Computer Science

Supervisors: Prof. Ali Ghodsi and Prof. Amir Keyvan Khandani

GPA (End of Third Term) : 4/4 (95.33/100)

University of Waterloo, Waterloo, Canada

May 2016 - April 2018

M.A.Sc in Electrical and Computer Engineering (in Wireless Communication Systems)

Thesis: "Methods for Nonlinear Impairments Compensation in Fiber-Optic Communication Systems" Supervisor: Prof. Amir Keyvan Khandani

GPA : 4/4 (94.6/100)

Amirkabir University of Technology-Tehran Polytechnic, Tehran, Iran

Sep

2011 - Aug 2015

B.A.Sc in Electrical Engineering

GPA(Wireless Communication Systems): 18.66/20 (93.3/100)

GPA in Control Systems(minor field, not completed) : 18.67/20 (93.3/100)

Research Interests

Privacy Preserving Machine Learning

Causal Inference

Natural Language Processing

Federated Learning

Reinforcement Learning

Social Network Analysis

Honors and Awards

Mathematics Domestic Graduate Student Award

2020

Graduate Research Studentship

2016 and 2017

Graduate International Student Award

2016 and 2017

Faculty of Engineers Award	2016
Awarded to start Master's program in Electrical Engineering without entrance exam (Declined)	2015
Awarded to start Master's program in Computer Science without entrance exam (Declined)	2015
Awarded to study two sub-fields of Electrical Engineering during Bachelor's	2014
Awarded to study two majors during Bachelor's (Declined)	2013
Top %0.1 , Iranian National University Entrance Exam	2010

Publications and Patents

Paul Struhsaker, Paul Posner, Ali Saheb Pasand, Amir Keyvan Khandani. **METHODS FOR FORMATION OF ANTENNA ARRAY USING ASYMMETRY**, US Patent 10,651,920 (May 2020)

Ali Saheb Pasand*, Hadi NekoeiQachkanloo*, Benyamin Ghojogh*, Mark Crowley. **Artificial Counselor System For Stock Investment**,(*The first three authors contributed equally to this work) In Innovative Applications of Artificial Intelligence (IAAI-19). 27 January. IAAI-19 Conference, Honolulu, Hawaii, USA, 2019.: AAAI Press., p. 8.

Ali Saheb Pasand*, Benyamin Ghojogh*, Fakhri Karray, and Mark Crowley. **Quantized Fisher Discriminant Analysis**, arXiv preprint arXiv:1909.03037 (2019).

Related Courses

Computational Linear Algebra: 99/100	Reinforcement Learning: 96/100
Information Theory: 97/100	Stochastic Processes: 95/100
Deep Learning for NLP: 91/100	Statistical Signal Processing: 91/100

Research Experience

May 2018– Dec 2019	Research Associate , <i>University of Waterloo</i> , Waterloo, Canada, CST Lab. Supervisor: Prof. Amir Keyvan Khandani
Summer 2014	Real-time Control Systems Lab , <i>Amirkabir University of Technology</i> , Tehran, Iran, Supervisor: Prof. Heydar Ali Talebi.
Summer 2013	Multimedia and Signal Processing laboratory , <i>Sharif University of Technology</i> , Tehran, Iran, Supervisor: Prof. Marvasti. Worked on compression schemes such as (MP, OMP, LAMP, IMAT, IMATI, IMATLI)

Current Projects(Unfinished)

Loss Landscape Aware Knowledge Aggregation in Federated Learning Scheme

Secure Random Supervised Projection in Horizontal and Vertical Federated Learning Schemes

Loss Landscape Aware Model Compression by Using Fast Hadamard Transformation

Dataset Compression by Using Fast Hadamard Transformation

Efficient Attention Mechanism by Extending Keys and Values over Hadamard Basis

Finished Projects

Model Compression Based on Fast Hadamard Transformation, Supervisor: Prof. Ali Ghodsi and Prof. Khandani

Deep Neural Networks With Random Weights Based on Supervised Random Projection and Random Kernel Approximation, Supervisor: Prof. Ali Ghodsi

Transforming Style of Text by Using Back-translation and Sentence-BERT as a Service, Supervisor: Prof. Ming Li

Design and Implementation of an Authentication Engine Suitable for Low-Budget IoT Devices, Supervisor: Prof. Amir Keyvan Khandani

Design and Implementation of a Satellite Tracker Based on Machine Learning Techniques, Supervisor: Prof. Amir Keyvan Khandani

Power Line Inspection via a Deep Learning Network Implemented on a Quadcopter, Supervisor: Prof. Abdollahi

Design and Implementation of Neural Network With Complex Weights in Order to Perform Fast Non-linear noise Pre-Compensation, Supervisor: Prof. Amir Keyvan Khandani

Message Compression by Using Reinforcement Learning, Supervisor: Prof. Amir Keyvan Khandani

Design and Implementation of a Complete Cloud Storage System with an

Innovative Key Establishment Scheme, Supervisor: Prof. Amir Keyvan Khandani

Techniques for Non-linear Noise Reduction in Fiber-Optic Links, Supervisor: Prof. Amir Keyvan Khandani

Random Projection for Non-linear Noise Impairment Reduction in Fibre Optic Links, Supervisor: Prof. Amir Keyvan Khandani

Finding flaws in CFEC+ decoder for Optical Systems, Supervisor: Prof. Amir Keyvan Khandani

Artificial Counselor System For Stock Investment, Supervisor: Dr. Mark Crowley

"Reconstruction of Randomly Sampled Image with IMAT and IMATLI Algorithms"Multimedia and signal Processing Laboratory (Sharif Univ), under supervision of Dr.Marvasti

"Control of flexible link with Neural Network"Final project of "Linear Control System's Design" course, under supervision of Dr. H. A. Talebi

Teaching Experience

Teaching Assistant (University of Waterloo): ECE316
ECE380
ECE484

Lab Instructor (Amirkabir University of Technology): Digital Signal Processing
Communication Systems I
Optical Communication Systems
Digital Control Systems

Skills

Engineering Software Advance: Matlab(Octave)
Basic: LabView, ADS

Programming Languages Intermediate: Python, C/C++
Basic: R, Java, VHDL, CSS, HTML, JavaScript, Node.js

Frameworks Intermediate: Pytorch, Keras
Basic: TensorFlow

Soft Skills: Teamwork, Problem Solving, Time Management