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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
Federated Learning
Causal Inference
Reinforcement Learning
Natural Language Processing
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
Information Theory: 97/100
Deep Learning for NLP: 91/100
Reinforcement Learning: 96/100
Stochastic Processes: 95/100
Statistical Signal Processing: 91/100

Work Experience

May 2018–Dec 2019 **Research Associate**, *University of Waterloo*, Waterloo, Canada, CST Lab.
Supervisor: Prof. Amir Keyvan Khandani

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 Tansformation

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 Reinforcment 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

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