Hamed RahmaniKhezri

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Education

Simon Fraser University | Vancouver, Canada 2019 - 2021
Master of Science in Computer Science, GPA : 4.08 Detailed List of Courses
Selected Courses :Statistical Machine Learning, Computational Photography, Design and Analysis of Algorithms

University of Tehran | Tehran, Iran 2014 - 2019
Bachelor of Science in Electrical Engineering, **Minor** *in Computer Engineering, GPA : 17.52/20* Detailed List of Courses
Thesis : "Deep Reinforcement Learning for Dynamic Reliability Aware NFV-Based Service Provisioning"

Technical Skills

Programming	• C/ C++ (~15k Lines) • Python/ Matlab (~9k Lines) • Git/ Docker • CSS/ Bootstrap • AVR/ Verilog
Machine Learning	• Pytorch/ Tensorflow (Keras) • Numpy/ Scikit-Learn
Data Science	• MySQL/ PostgreSQL • Scala/ R (~1k Lines) • Tableau/Google Cloud Platform

Professional Experience

Sep 2019 – Mar 2021 **Graduate Research Assistant** | Huawei-SFU Joint Lab (NSL), Simon Fraser University
- Working on designing solutions for Single Image Reflection Removal, including unsupervised and user-assisted methods
- Submitted a paper *Confidential* to ACM Multimedia 2020, on Unsupervised Reflection Removal with our team.

May 2018 – May 2019 **Undergraduate Research Assistant** | Smart Networks Lab ,Mobile Communication Systems Lab, University of Tehran
- Optimized the throughput in a multi-agent CSMA environment using Deep-Q Learning (DQN)
- Designed a novel method based on deep-RL to model NFV placement problem considering the reliability requirement of the services, which significantly improves the performance of the network operator, and was presented in IEEE GLOBECOM 2019.

Jun 2017 – Aug 2017 **Intern** | Farineh Fanavar, Tehran, Iran
- Working with Farineh PLC environment, and working with their Distributed sensors and IoT with C/C++.

Teaching Assistant | University of Tehran, Tehran, Iran
- Probability and Statistics (2019), Artificial Intelligence (2019), Intelligent Systems (2019), Linear Control Systems (2018)

Publications

Aug 2020 S. Kim, **S.H. Rahmani**, M. Nourbakhsh, M. Hefeeda. *Unsupervised Single-Image Reflection Separation Using Perceptual Deep Image Priors*, Arxiv

Dec 2019 **S.H. Rahmani**, P.A. Moghadam, M.K. Farshbafan, V. Shah-Mansouri, H. Kebriaei, D. Niyato. *Deep Reinforcement Learning for Dynamic Reliability Aware NFV-Based Service Provisioning*, IEEE GLOBECOM'19

Projects

Gerdabify : Simplified Spotify C++ • Object Oriented Programming • Socket Programming
• Design and implementation of an app and its API, in which user can browse, play, share, and rate music and manage media as different accounts (critic, admin, artist, etc), and designing Web API for our client to connect to web server through queries and visualize graphically.

Space Invaders C++ • SDL
• Designing a 2D game using SDL Library, where user takes control of a space ship, and has to defend against enemy forces.

Improving Visual Question Answering (VQA) Using Semantic Analysis and Active Learning NLTK • Pytorch • RNN • CNN
• Improving a VQA model, in the presence of unlabelled data using a captioning module as an oracle, and defining a semantic similarity loss between the question and the caption to interpret as potential label. The test accuracy achieved while having lack of labeled data, is on par with having all the labels.

Sequence Processing Python • Keras • RNN
• Designing RNN-based language model for sentence(poem) composition and classifying newspaper's articles.

Texture Synthesis and Transfer MATLAB • Computer Vision • Computational Photography
• Synthesizing texture by stitching best patches based on overlapping regions.
• Re-rendering an image in the style of another one, based on texture synthesis

Poisson Image Blending MATLAB • Computer Vision • Computational Photography
• Gradient-domain blending for seamless image composition using Poisson equation

Image Denoising with Gibbs Sampling Python • Statistical Machine Learning • Graphical Models
• Restoring noisy image through estimating posterior probability of the pixel values using Monte Carlo method.

Message Recovery using Loopy Belief Propagation and Factor Graphs Python • Statistical Machine Learning • Message Passing
• Correcting the error in partially corrupted messages using LBP and highly sparse, low density parity check matrices.

Analysis of Ventral Temporal Cortex behaviour against different objects and faces R • Statistical Inference • Data Analysis
• Analyzing fmri data from six subjects using different statistics like ANOVA, t-test, parametric and non parametric paired tests, KS test, and visualizing with qq-plot and plots to find the correlation between Ventral Temporal and other brain loops.

Classification using Decision Tree MATLAB • Data Analysis
• Classifying letters through designing a decision tree from scratch involving bagging and Random Forest, with different metrics(IG/GINI)

Designing agents with Reinforcement Learning Python • Reinforcement Learning • Keras • MATLAB
• Designing agents using RL from scratch to solve the Hanoi Tower and find its way out from a randomly generated maze(Q-Learning).
• Solving resource allocation problem in computer-network-based scenario by designing a solution using deep-RL(DQN).

Honor and Awards

Jan 2020	Received **Graduate Fellowship**, Simon Fraser University (awarded by the CS Department on the basis of academic excellence.)
Mar 2019	Received fully-funded admissions from **Rice University and UMD** (Ph.D in ECE), and M.Sc from **Simon Fraser University** CS Department
Nov 2017	**Honored Alumni** during my B.Sc and was awarded with M.Sc. Admission from the ECE Department of University of Tehran.
Sep 2014	Member of Iran's National Elites Foundation, due to being **ranked 71st**, among 250,000 participants in the university entrance exam

Volunteer Experience

Sep 2019	**Fire marshal** of TASC1 building at SFU Burnaby campus
Sep 2020	**Mentor** of new graduate students of the behalf of CSGSA as SFU Buddy.
Oct 2020	Cooperating with Y. Lecun and A. Canziani to translate NYU **Deep Learning course** to Persian.