

Pedram Agand

Research assistant at MARS lab, SFU – BC – Canada

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Education

Simon Fraser University (SFU) (GPA: 4.08/4.33)

Ph.D. of computer science [Mo Chen, Angelica Lim]

Machine learning, deep learning, probabilistic approaches, reinforcement learning

Barnaby, Canada

Sep 2019 – Present

Simon Fraser University (SFU) (GPA: 4.13/4.33)

M.Sc. of computer science [Mo Chen, Angelica Lim]

Thesis: [From Estimation to Control for Robotic Navigation: Probabilistic and Optimal Approaches](#)

Barnaby, Canada

Sep 2019 – Aug 2020

K. N. Tossi University (GPA: 3.91/4)

M.Sc. of electrical engineering [Hamid D. Taghirad, Ali Khali-sedigh]

Thesis: [Control architecture based on environment impedance in Teleoperated system in Bayesian paradigm](#)

Tehran, Iran

Sep 2014– Aug 2016

K. N. Tossi University (GPA: 3.89/4)

B.Sc. of electrical engineering [Hamid D. Taghirad]

Thesis: [Implementation and control of Minimally Invasion Eye Surgery Parallelogram Robot](#)

Tehran, Iran

Sep 2010– Aug 2014

Selected publications

[Human Navigational Intent Inference with Probabilistic and Optimal Approaches](#)

Pedram Agand, Mahdi Taher Ahmadi, Angelica Lim, and Mo Chen

ICRA 2022

Assuming noisily rational model of human behaviour with internal parameters that are recursively and continuously updated in a Bayesian fashion.

[EcoLight: Reward Shaping in DRL for Environment Friendly Traffic Signal Control](#)

Pedram Agand, Alexey Iskov, and Mo Chen

NeurIPS 2021

Reward shaping scheme for various RL methods that reduces CO2 emissions in addition to total travel time that was presented in tackling climate change with machine learning workshop.

[Adaptive model learning of NN with UUB stability for robot dynamic estimation](#)

Pedram Agand, and Mehdi A. Shoorehdeli

IJCNN 2019

Three parallel self-driving neural networks is developed in an adaptive scheme based on continuous Lyapunov function for online robot dynamic identification.

[Adaptive RNN with Lyapunov stability learning rules for robot dynamic terms identification](#)

Pedram Agand, and Mehdi A. Shoorehdeli, and Ali Khaki-Sedigh

EAAI 2017

Parallel recurrent network is utilized to facilitate regression conditions by defining weighted augmentation error which confines feasible solution in a convex subset.

[Particle filters for non gaussian hunt crossley model in bilateral teleoperation](#)

Pedram Agand, Hamid D. Taghirad, and Ali Khaki-Sedigh

ICROM 2016

Sequential Monte Carlo method (SMC) for modeling telesurgeries environment as a robust unbiased estimation of nonlinear non-Gaussian problem with desired precision.

Technical skills

- **Sci. Computing:** Pytorch, TensorFlow, MATLAB, R, OpenCV, CUDA.
- **Web Programming:** Flask, HTML, CMS, CSS, SQL.
- **General Development:** Python, C&C++.

- **Other:** ADSL, Unix, Docker, GitHub, L^AT_EX.

Professional experience

- Canada Research Chairs (CRC)** May 2022- now
Machine learning engineer [directed by Dr Tenzin Doleck]
 ◦ A recommendation system to provide AI-enhanced feedback for learning, based on collaborative filtering
 ◦ Developing Datu prototype with Flask/SQL and including the knowledge process and Dev-ops ([GitHub](#)).
- Joint project SFU and National Research Council of Canada(NRC)** Sep 2021- now
Data scientist [supervised by Allison Kennedy, Chanwoo Bae , Harris Trevor]
 ◦ From preprocessing (dimension reduction, data analysis) to modeling, prediction, and optimization of navigational practice in BC ferry vessel using deep network and non-parametric ensemble technique ([GitHub](#)).
- Internship at Breeze traffic** Apr-Aug 2021
Research scientist [supervised by Alexey Iskov, and Alexander Kurtynin]
 ◦ Developing reward shaping DRL framework for traffic signal control to reduce carbon dioxide ([GitHub](#)).
- Joint project SFU and Huawei** Jan 2020-Nov 2020
Research scientist [supervised by Dr Zhan Xu, Daesik Jang]
 ◦ Human navigational intent prediction using probabilistic and optimal approaches by computing time to reach and implied reinforcement learning ([GitHub](#)).

Highlighted projects

- ARMCMC: Bayesian Online Full Density Estimation of Model Parameters** Ongoing
 Pedram Agand, Mo Chen, and Hamid D. Taghirad
 A variable jump distribution based on a temporal forgetting factor is proposed in ARMCMC that calculates the complete probability density of model parameters in complex hybrid models.
- Monocular Object Distance Estimation without Class Specific Information** Ongoing
 Michael Chang, Pedram Agand, and Mo. Chen
 Estimating the object's distance to the camera by combining the change in an object's appearance over time together with the camera's motion.
- Classification CIFAR100 with deep network** Feb 2020
 Modified ResNet architecture in the convolutions layer by changing the kernel size and batch-norm/max-pool, ablation study by adding a new 2D convolution layer, avoid over fitting, competition in [Kaggle](#)
- Age Race Gender (ARG) detection with deep learning** Nov 2019
 Using transfer learning on FaceNet network with TensorFlow to detect human feature. Creating online module for realtime face detection (YOLO) and classification.
- Matlab Real-time communication with peripherals** Aug 2016
 Matlab S-function in external mode rendering with Watcom compiler to communicate in serial protocol.

Honors and awards

- **Graduate Fellowship** full scholarship for 4 years from SFU applied science 2019-2023
- **Entrance scholarship** 10,000 CAD from graduate dean SFU 2019
- **Elite foundation of Iran membership** privilege for exceptional talented graduate students 2017
- **Best researcher award** from university dean among M.Sc. degree students. 2017
- **Best paper Award** for oral presentation [particle filters for non-Gaussian hunt-crossley models](#) 2016
- **Direct admission** for M.Sc. in K. N. Toosi without university entrance 2014
- **Top Rank** ranked 3th in control major and 5th in whole ECE faculty 2014