Pedram Agand

Research assistant at MARS lab, SFU – BC – Canada

⌘ upaspro/pedram-agand   ✉ pagand@sfu.ca   ⌂ pagand

☐ +1 778-681-4412   **in** agand   **G** google scholar

Education

Simon Fraser University (SFU) (GPA: 4.08/4.33)	**Barnaby, Canada**
Ph.D. of computer science [Mo Chen, Angelica Lim]	*Sep 2019 – Present*

Machine learning, deep learning, probabilistic approaches, reinforcement learning

Simon Fraser University (SFU) (GPA: 4.13/4.33)	**Barnaby, Canada**
M.Sc. of computer science [Mo Chen, Angelica Lim]	*Sep 2019 – Aug 2020*

Thesis: From Estimation to Control for Robotic Navigation: Probabilistic and Optimal Approaches

K. N. Tossi University (GPA: 3.91/4)	**Tehran, Iran**
M.Sc. of electrical engineering [Hamid D. Taghirad, Ali Khali-sedigh]	*Sep 2014- Aug 2016*

Thesis: Control architecture based on environment impedance in Teleoperated system in Bayesian paradigm

K. N. Tossi University (GPA: 3.89/4)	**Tehran, Iran**
B.Sc. of electrical engineering [Hamid D. Taghirad]	*Sep 2010- Aug2014*

Thesis: Implementation and control of Minimally Invasion Eye Surgery Parallelogram Robot

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 Iskrov, and Mo Chen   **NeurIPS 2021**

Reward shaping scheme for various RL methods that reduces CO_2 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, LaTeX.

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 engineering the knowledge process and Dev-ops

Joint project SFU and National Research Council of Canada(NRC)   *Sep 2021- now*
Data scientist [supervised by Allison Kennedy, Chanwoo Bae , Harris Trevor]
○ From prepossessing (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 Iskrov, 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