

# HOSSEIN SHARIFI-NOGHABI

Machine learning developer | Bioinformatics researcher

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## HIGHLIGHT

- Expert in developing machine learning methods for real-world challenges (five years of experience in employing machine learning in biology and medicine with two top-tier publications).
- Experienced in teamwork particularly when members have diverse backgrounds (three years of experience in collaboration with life scientists).
- Interested and passionate about learning (10 online certificates on different topics such as deep learning and reinforcement learning).
- Skilled in Python, R, Pytorch, Tensorflow, Keras, scikit-learn, and Pandas (three years of experience in deploying them for real-world problems).

## EXPERIENCE

### Research Student (co-op)

#### Princess Margaret Cancer Centre

Jun 2020 – Dec 2020 (Expected) Toronto, Ontario

- Leading a project to propose the first guideline on how to employ machine learning in pharmacogenomics. The guideline investigates generalization of machine learning methods in cross-domain drug response prediction using RNA-Seq data and provides solution to improve that.
- Implemented codes in Python and R, and utilized Pytorch and scikit-learn.
- Supervisor: Dr. Benjamin Haibe-Kains.

### Research Assistant

#### Simon Fraser University

Sep 2016 – Sep 2021 (Expected) Burnaby, British Columbia

- Led multiple projects on improving the accuracy of drug response prediction in patients using gene expression data. I developed 3 methods based on multi-modal representation learning, transfer learning with input and output space adaptation, and semi-supervised domain generalization. On average, these methods improved the prediction accuracy by 9% compared to state-of-the-art methods.
- Implemented codes in Python and utilized Pytorch and Keras frameworks.
- Mentored undergraduate research assistants in Database and Data Mining Laboratory.
- Collaborated with life scientists, clinical fellows, and staff at the Vancouver Prostate Centre (VPC).
- Supervisors: Prof. Martin Ester and Prof. Colin C. Collins (VPC).

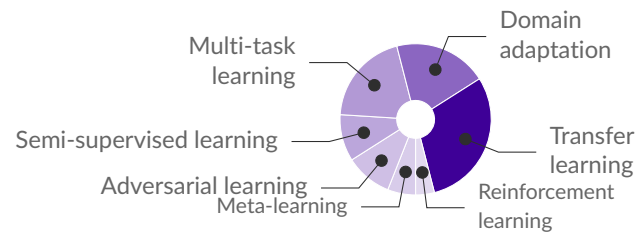
### Collaboration

#### GenomeDx Inc.

Sep 2017 – Jan 2018 Vancouver, British Columbia

- Developed a novel method to predict metastasis (a binary outcome) in prostate cancer from early stages using gene expression data. This method was based on denoising autoencoders and transfer learning on unlabelled and labelled clinical samples and improved the prediction accuracy by 2% compared to state-of-the-art clinical studies.
- Implemented codes in Python and R, and utilized Tensorflow framework.
- Supervisor: Dr. Seagle Liu.

## MACHINE LEARNING SKILLS



## EDUCATION

### Ph.D. in Computer Science

#### Simon Fraser University

Sep 2016 – Sep 2021 (Expected)

### M.Sc. in Artificial Intelligence

#### Ferdowsi University of Mashhad

Sep 2012 – Feb 2015

### B.Eng. in Information Technology

#### Sadjad University of Technology

Sep 2008 – July 2012

## SELECTED PUBLICATIONS

- H. Sharifi-Noghabi, H. Asghari, N. Mehrasa, M. Ester, "Domain Generalization via Semi-supervised Meta Learning" *Under review* (2020).
- H. Sharifi-Noghabi, S. Peng, O. Zolotareva, C. Collins, M. Ester, "AITL: Adversarial Inductive Transfer Learning with input and output space adaptation for pharmacogenomics" *Bioinformatics (ISMB 2020)*.
- H. Sharifi-Noghabi, O. Zolotareva, C. Collins, M. Ester, "MOLI: multi-omics late integration with deep neural networks for drug response prediction" *Bioinformatics (ISMB/ECCB 2019)*.
- For the complete list please visit [HERE](#)

## PERSONAL PROJECTS

- Vision: Applied Convolutional Neural Networks to image verification and recognition tasks and neural style transfer to generate new arts.
- NLP: Applied LSTM and GRU models to synthesize Shakespeare's text, speech recognition, and music synthesis.
- RL: Implemented Q-Learning and Expected Sarsa both with  $\epsilon$ -greedy action selection on Cliff World.
- RL: Implemented semi-gradient TD with a Neural Network as the function approximator for an RL agent in 500-State Random Walk Environment.