Hossein Sharifi-Noghabi

Machine learning researcher/ Bioinformatics researcher/ Data scientist
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Research interests

Deep transfer learning, Unsupervised domain adaptation, few- and zero-shot adversarial learnings, interpretability of deep models, application in oncology and healthcare.

Education

Ph.D. in Computer Science (GPA: A+)   Sep 2016-Present

Simon Fraser University, Burnaby, BC, Canada.
- ❏ Supervisors: Prof. Martin Ester and Prof. Colin Collins
- ❏ Awards: Computing Science Graduate Fellowship ($6,500, $7,400, and $8,000)
- ❏ Teaching Assistant: Introduction to computer programming I (Python)

M.Sc. in Artificial Intelligence (GPA: 17.05/20)   Sep 2012-Feb 2015

Ferdowsi University of Mashhad, Iran.
- ❏ Supervisor: Prof. H. Rajabi Mashhadi
- ❏ Honor: Admitted as exceptional talents students without entrance exam and with tuition remission

B.E. in Information Technology (GPA: 17.92/20)   Sep 2008-July 2012

Sadjad University of Technology, Mashhad, Iran.
- ❏ Honor: Ranked 1st among 67 students of Information Technology

Selected publications

H. Sharifi-Noghabi, O. Zolotareva, C. C. Collins, M. Ester. (2019), "MOLI: Multi-Omics Late Integration with deep neural networks for drug response prediction", *Bioinformatics* 35 (14), i501–i509. Presented at ISMB/ECCB 2019. Received 1,500 USD travel award from the conference.

H. Sharifi-Noghabi, Y. Liu, N. Erho, R. Shrestha, M. Alshalalfa, E. Davicioni, C. Collins, M. Ester. (2018), "Deep Genomic Signature for early metastasis prediction in prostate cancer", *Recomb-CCB* 2019.

H. Sharifi-Noghabi, H. Rajabi Mashhadi, K. Shojaee. (2016), "A novel mutation operator based on the union of fitness and design spaces information for Differential Evolution", *Soft computing* (21) 6555–6562

M. Mohammadi, **H. Sharifi-Noghabi**, H. Rajabi Mashhadi, G. Hodtani. (2016), "Robust and stable gene selection via Maximum-Minimum Correntropy Criterion", *Genomics* (170) 83-87. (joint first authorship)

Work experience

Research Assistant, Vancouver Prostate Centre (Full time)   Mar 2017-Present

- ❏ Member of Laboratory for Advanced Genome Analysis directed by Prof. C. Collins
- ❏ Obtained basic understanding of cancer biology-particularly prostate cancer
- ❏ Presented a project on metastasis prediction at 12th annual Robert Sullivan Research Day

❏ Participated in numerous research projects and grants as one of the bioinformaticians

Research Assistant, Simon Fraser University (Full time)   **Sep 2016-Present**

❏ Developed skills on deep unsupervised learning such as different Autoencoders, deep multi-task learning, and deep transfer learning (inductive and adversarial transfer learning)
❏ Designed and developed a novel methods in Pytorch for drug response prediction via adversarial inductive transfer learning between cancer cell lines and patients to: 1) adapt the input domains in the genomic level, and 2) adapt the output spaces between different measures of drug response in cell lines and patients.
❏ Started a reading group on Reinforcement Learning after attending the DLRL summer school 2019 at the University of Alberta.

Research Intern, GenomeDx Inc. (Research collaboration)   **Sep 2017-Jan 2018**

❏ Developed a novel method in Tensorflow to predict metastasis in prostate cancer using Autoencoders and transfer learning on unlabelled and labelled genomic data and improved the accuracy compared to the state-of-the-art studies
❏ Developed skills to analyze data via R such as survival analysis and data visualization
❏ Obtained experience to collaborate with researchers with different backgrounds
❏ Supervisors: Dr. Elai Davicioni, Nicholas Erho, and Dr. Yang Liu (Seagle)

Selected course/personal projects during Ph.D.

Automatic chemical compounds design via Autoencoders using SMILES representation.
❏ The goal was to generate new molecules via Variational Autoencoders. The hypothesis is that its learned representation is rich enough to sample and generate new molecules from it
❏ Used SMILES representations of existing chemical compounds and trained the Autoencoder on them

Mini personal projects on Convolutional and Recurrent Neural Networks
❏ Vision: Applied CNN to image verification and recognition tasks
❏ Vision: Used neural style transfer to generate new arts
❏ NLP: Applied RNN models to synthesize Shakespeare's text
❏ NLP: Applied RNN to speech recognition and music synthesis

Technical and general skills

Programming languages: Python, C
Deep learning: Tensorflow, Pytorch, Keras
Data science: Matlab, R
Desktop and OS: Microsoft office, Latex, Photoshop, Windows, Ubuntu

Volunteer positions

SFU Omics organizer—a group to provide an environment for students and other academics to come together to talk about their research related to Genomics, Proteomics, and Metabolomics. (2018-Present)