

Mahdi Gilany

CONTACT

🌐 Personal Page 🌐 GitHub **in** LinkedIn ✉ Email: mahdi.gilany@queensu.ca

SUMMARY

Extensive machine learning and deep learning background, both theoretical and practical

Experienced in designing and implementing deep learning models for real-world problems with most up-to-date software tools

Excellent writing, teamwork, and communication skills acquired from prior industrial and academic experience and research publications

RESEARCH EXPERIENCE

Research Assistant

Medical Informatics Laboratory

Queen's University

Winter 21–now

My primary research is to develop deep learning models for diagnosing prostate cancer on ultrasound images. In this real-world problem, we are dealing with many medical imaging challenges such as low labeled-data regime, weak labeling, distribution shift, and prediction uncertainty. My project involves in addressing different aspects of this problem.

- *Robust predictions and confident diagnoses* seeks to answer how not to learn spurious features which hurt generalizability on unseen data, and if learned to some extent how to avoid disastrous predictions with uncertainty quantification. Robust predictions are critical in healthcare.
- *Self-supervised ultrasound representation learning* deals with learning abstract representations from readily available unlabeled ultrasound images. It essentially helps alleviating the need for large amount of labeled data, and naturally opens up ways to address weak labeling when combined with Transformers.

Research Assistant

Lab of Use-inspired Computational Intelligence

Rochester Institute of Technology

Fall 19–Winter 21

My primary research was to develop deep learning models from using probabilistic view. I worked on two main projects, probabilistic neural model inference and probabilistic continual learning.

- *Probabilistic neural model inference* deals with finding the most plausible (model posterior distribution) neural architecture warranted by data. It essentially learns neural architecture, i.e., depth and width, with some assumption on the space of models.
- *Probabilistic continual learning* deals with teaching a neural model to continually learn new tasks without forgetting the past. The devised neural model, for each task, learns to update the posterior distribution on weights to not forget the past and neural architecture to increase the capacity of network.

EDUCATION	Queen's University	Ontario
	PhD in School of Computing, GPA 4.0/4.0	Winter 21–now
	Supervisors: Dr. Parvin Mousavi, Co-supervisor: Dr. Purang Abolmaesumi	
	Rochester Institute of Technology (Transferred to Queen's)	New York
	PhD in Computing and Information Sciences, GPA 4.0/4.0	Fall 19–Winter 21
	Supervisor: Dr. Rui Li	
	University of Tehran	Tehran
	BSc in Electrical Engineering, GPA 3.73/4.0	Fall 14–Fall 18
PUBLICATIONS	KC, Kishan and Li, Rui and Gilany, Mahdi , "Joint Inference for Neural Network Depth and Dropout Regularization", <i>Advances in Neural Information Processing Systems (Neurips)</i> , 2021.	
Google Scholar		
	Gilany, Mahdi , and Wilson, Paul and Jamzad, Amoon and Fooladgar, Fahimeh and To, Minh Nguyen Nhat and Wodlinger, Brian and Abolmaesumi, Purang and Mousavi, Parvin, "Towards Confident Detection of Prostate Cancer Using High Resolution Micro-ultrasound", <i>International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)</i> , 2022.	
	Wilson, Paul* and Gilany, Mahdi * and Jamzad, Amoon and Fooladgar, Fahimeh and To, Minh Nguyen Nhat and Wodlinger, Brian and Abolmaesumi, Purang and Mousavi, Parvin, "Self-Supervised Learning with Limited Labeled Data for Prostate Cancer Detection in High Frequency Ultrasound", <i>arXiv preprint arXiv:2211.00527</i> , 2022.	
HONORS & AWARDS	Queen's Graduate Fellowship/Award	21–now
	NSERC MedICREATE Training Award	21–now
	Queen's Virtual Travel Award	22
	RIT PhD Merit Full Scholarship	19–21
TECHNICAL SKILLS	<i>Data Science Tools</i>	NumPy, Pandas, Matplotlib, Scipy
	<i>Deep Learning Frameworks</i>	PyTorch, TensorFlow/Keras
	<i>Programming Languages</i>	Python, MATLAB, C/C++, Java
TEACHING ASSISTANCE	Introduction to Computing Science I, Linear Data Analysis, Engineering Probability and Statistics, Linear Control Systems	
RELAVANT COURCES	• Deep Learning	• Stochastic Processes
	• Statistical Machine Learning	• Software Engineering Foundation
	• Reinforcement Learning	• Linear Algebra