

## SUMMARY

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- Over 4 years of professional experience in designing and implementing a wide range of deep learning models for **challenging real-world applications**.
- Solid and profound background in machine learning and deep learning and fundamental concepts behind them such as **probability theory**, **Bayesian statistics**, linear algebra and optimization.
- Advanced expertise in programming languages such as **Python** and MATLAB and related software tools such as **PyTorch**, TensorFlow, Scikit Learn, and Pandas.
- Self-motivated and adaptable, with a track record of successfully **designing essential experiments**, solving problems, and **publishing in top-tier conferences**.
- Demonstrated ability to think critically, work hard, and meet deadlines. Committed to **collaboration and communication** in the workplace, and passionate about staying up-to-date with recent advances.

## EXPERIENCE

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### Research Assistant

*Medical Informatics Laboratory*

Queen's University

Sep 2021–Present

Primary research on diagnosing **prostate cancer** from **ultrasound RF images**:

- **Self-supervised domain invariant/disentangled representation learning**: Addressing domain distribution shift by learning domain (hospital, patient, etc) invariant feature representations or disentangling them from task features.
- **Self-supervised attention-based multi-instance learning**: Providing fine-scale predictions from coarse labels by applying attention on bag of feature embeddings and using attention maps.
- **Robust diagnosis with uncertainty quantification**: Achieving robust diagnoses by addressing the remained distribution shift and out-of-distribution samples by discarding unconfident predictions.

### Research Assistant

*Lab of Use-inspired Computational Intelligence*

RIT

Sep 2019–Jan 2021

Primary research on **Bayesian deep learning** in two areas:

- **Neural architecture inference using beta-Bernoulli processes**: Inferring the posterior distribution over architectural hyper-parameters (number of layers and neurons) using stochastic variational inference methods.
- **Variational continual learning with a dynamic network**: Dynamically growing a neural network architecture in VCL setting to overcome neural capacity problem.

### Machine Learning Engineer

*Startup Studio Octa*

Octa Company

Nov 2018–Jul 2019

- **Crypto currency price prediction with technical analysis**: Predicting different crypto-coins' prices using time series analysis and RNNs.

### Research Assistant

*Secure Communication Lab*

University of Tehran

Apr 2018–Jul 2018

- **Hand-gesture detection**: Developing a CNN-based deep learning model for detecting hand and identifying gestures in real-time.

## EDUCATION

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### Queen's University

PhD in Computer Science, GPA:4.0/4.0

Supervisor: Dr. Parvin Mousavi, Co-supervisor: Dr. Purang Abolmaesumi

Ontario, Canada

Jan 2021–Present

### Rochester Institute of Technology(Transferred to Queen's)

PhD in Computer Science, GPA:4.0/4.0

Supervisor: Dr. Rui Li

New York, USA

Sep 2019–Jan 2021

### University of Tehran

BSc in Electrical Engineering (major Communication), GPA: 3.73/4.00

Thesis supervisor: Dr. Mohammad Ali Akhaee

Tehran, Iran

Sep 2014–Sep 2018

## PUBLICATIONS

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1. K. KC, R. Li, and **M. Gilany**, “Joint inference for neural network depth and dropout regularization”, in *Advances in Neural Information Processing Systemsn (Neurips)*. [\[Link\]](#)[\[Code\]](#)
2. **M. Gilany**, P. Wilson, A. Jamzad, F. Fooladgar, M. N. N. To, B. Wodlinger, P. Abolmaesumi, and P. Mousavi, “Towards confident detection of prostate cancer using high resolution micro-ultrasound”, in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*. [\[Link\]](#)[\[Code\]](#)
3. **M. Gilany\***, P. Wilson\*, A. Jamzad, F. Fooladgar, M. N. N. To, B. Wodlinger, P. Abolmaesumi, and P. Mousavi, “Self-supervised learning with limited labeled data for prostate cancer detection in high frequency ultrasound”, *arXiv preprint arXiv:2211.00527*, 2022. [\[Link\]](#)[\[Code\]](#)

## HONORS AND AWARDS

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- Queen's Graduate Fellowship/Award 2021–Present
- NSERC MedICREATE Training Award 2021–Present
- Queen's Conference Travel Award 2022
- RIT PhD Merit Full Scholarship 2019–2021

## SKILLS

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- *Data Science Tools* NumPy, Pandas, Matplotlib, Scipy
- *Deep Learning Frameworks* PyTorch, TensorFlow/Keras
- *Programming Languages* Python, MATLAB, C/C++, SQL, Java, R

## RELEVANT COURSES

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- Deep Learning
- Statistical Machine Learning
- Reinforcement Learning
- Stochastic Processes
- Software Engineering
- Linear Algebra
- Cyber-infrastructure (Parallel Programming)
- Geometric Deep Learning (online)