Florence Regol

McGill University,
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PhD candidate - Learning uncertainty/Learning on graphs - B.Eng/M.Eng ECSE - McGill, Montreal (Fr/Eng)

Research Areas

Learning uncertainty (generative models for categorical data, evaluating generative models, Bayesian inference) - Machine learning on graphs (node classification/regression, graph sampling, generative graph model, recommender system) - Active learning.

Master thesis: Active Learning for Attributed Graphs. **Supervisor**: Prof. Mark Coates.

Selected Publications

F. Regol and M. Coates, "Diffusing gaussian mixtures for generating categorical data," in *Proc. AAAI Conf. on Artificial Intelligence*, 2023.

F. Regol, S. Pal, J. Sun, Y. Zhang, Y. Geng, and M. Coates, "Node copying: A random graph model for effective graph sampling," *Signal Processing*, vol. 192, 2022.

F. Regol, S. Pal, Y. Zhang, and M. Coates, "Active learning on attributed graphs via graph cognizant logistic regression and preemptive query generation," in *Proc. Int. Conf. Machine Learning (ICML)*, 2020.

Y. Zhang, **F. Regol**, S. Pal, S. Khan, L. Ma, and M. Coates, "Detection and defense of topological adversarial attacks on graphs," in *Proc. Int. Conf. on Artificial Intelligence and Statistics (AISTATS)*, 2021.

S. Pal, S. Malekmohammadi, **F. Regol**, Y. Zhang, Y. Xu, and M. Coates, "Non parametric graph learning for bayesian graph neural networks," in *Proc. Uncertainty in Artificial Intell. (UAI)*, 2020.

J. Sun, W. Guo, D. Zhang, Y. Zhang, **F. Regol**, Y. Hu, H. Guo, R. Tang, H. Yuan, X. He, and M. Coates, "A framework for recommending accurate and diverse items using bayesian graph convolutional neural networks," in *KDD*, 2020.

F. Regol, S. Pal, and M. Coates, "Node copying for protection against graph neural network topology attacks," in *Proc. IEEE Computational Advances in Multi-Sensor Adaptive Process. (CAMSAP)*, 2019.

S. Pal, **F. Regol**, and M. Coates, "Bayesian graph convolutional neural networks using node copying," in *Proc. Learning and Reasoning with Graph-Structured Representations Workshop, (ICLR)*, 2019.

Research Experience

2021-2022 **Sidley Austin LLP**, *Consulting (Machine Learning Expert)*, NA.

I was tasked to assist a professor to provide a third-party expertise analysis of source code as part of a patent dispute.

- Inspect the source code and describe the algorithms employed.
- Assist in the production of summaries of code content for the lawyer team.

2019-2021 **Huawei**, *Associate Researcher, Intern*, Canada, Montreal.

I was part of a group of researchers that focuses on graph related problems. The outcomes of my work at Huawei are research paper publications and patents.

- Fundamental research - Active learning on graphs/Generative models for graphs.
- Product line integration - Integrated a recommender system algorithm.

Summer 2018 **McGill University**, *Undergraduate Research Internship (SURE)*, Canada, Montreal.

I worked on a breast cancer detection system that uses radio frequency as a screening mechanism. My main contribution was to develop signal feature extraction techniques and neural networks for classifying the scans.

- Design and develop machine learning classifiers.
- Optimize the hyperparameters search with NAS algorithms.
- Process the collected signals from the antennas using time-frequency analysis.

Education

Current **Doctor of Ph.D. Engineering**, *McGill University, Canada*, Supervisor : **Prof. Mark Coates**.

2018–2020 **Master of Engineering in Electrical and Computer Engineering**, *McGill University, Canada*, Supervisor : **Prof. Mark Coates**.

2014–2018 **Bachelor of Engineering in Software Engineering - Internship Program**, *McGill University, Canada Graduated with Distinction*.

Relevant Coursework Applied Machine Learning, Sampling Theory, Graph Theory, Network Analysis, Generalized Linear Models, Statistic and Probability, Bayesian Inference, Optimization

Workshops

2023 January • **Bellairs Workshop on Machine Learning and Statistical Signal Processing for Data on Graphs**, *Bellairs Research Institute*, Holetown, Barbados.
Evaluating Categorical Generative Models.

2021 February • **Bellairs Workshop on Machine Learning and Statistical Signal Processing for Data on Graphs**, *Bellairs Research Institute*, Holetown, Barbados.
Diffusion Generative Model for Categorical Data Modeling.

2019 February • **Bellairs Workshop on Machine Learning and Statistical Signal Processing for Data on Graphs**, *Bellairs Research Institute*, Holetown, Barbados.
Active Learning on Graphs - Sampling the Initial Set.

Scholarship

May'21 - May'24 **Alexander Graham Bell Canada Graduate Scholarship-Doctoral (NSERC)**
(105 000 $) Natural Sciences and Engineering Research Council of Canada

Sept'20 - May'24 **Mcgill Engineering Doctoral Award (MEDA)**
(128 000 $) Mcgill University

Sept'19 - May'19 **Graduate Excellence Fellowship (GEF)**
(3000 $) Mcgill University

Sept'18 - May'20 **McGill Engineering Undergraduate Student Masters Award (MEUSMA)**
(35 000 $) Mcgill University

May'18 - Sept'18 **Undergraduate Research Internship (SURE)**
(5625 $) Mcgill University

Software Engineering Experience

May'17 - March'18 **Hydro-Quebec**, *Software Developer Internship*, Montreal, Canada.

2015-2017 **Cysca-Sysacom**, *Software Developer Internship*, Montreal, Canada.