Richard Moulton

Department of Electrical and Computer Engineering richard.moulton@queensu.ca
Queen's University https://richard-moulton.github.io/

Education

PhD in Electrical and Computer Engineering, Queen's University 2018-Present
Supervisors: Dr. Karen Rudie and Dr. Stephen Scott
Thesis: Discrete-Event Systems for Modelling Decision-Making in Human Motor Control

Master of Computer Science, University of Ottawa 2016-2018
Supervisors: Dr. Nathalie Japkowicz and Dr. Herna Viktor
Thesis: Clustering to Improve One-Class Classifier Performance in Data Streams

Bachelor of Science, Honours Computer Science, Royal Military College of Canada 2006-2010
Supervisor: Dr. Louis Massey
Senior Project: A Web-Based Implementation of a Topics Computation Agent

Professional Experience

Research Assistant, Queen's University 2018-Present
Queen's Discrete-Event Systems Lab

Teaching Assistant, Queen's University 2019-Present
ELEC 270 Discrete Mathematics with Computer Engineering Applications (W19, W20)

Aerospace Control Officer, Canadian Armed Forces 2006-2016

Academic Awards

Postgraduate Scholarship – Doctoral, NSERC 2019-2022
Dean's Graduate Research Assistant Award, FEAS, Queen's University 2018-2021
Walter C. Sumner Fellowship Award, The Walter C. Sumner Foundation 2019

Best Student Data Mining Paper Runner Up, ECML-PKDD 2018
Ontario Graduate Scholarship, Government of Ontario 2017-2018
University of Ottawa Excellence Scholarship, University of Ottawa 2016-2018
Canada Graduate Scholarships–Michael Smith Foreign Study Supplement, NSERC 2017
Alexander Graham Bell Canada Graduate Scholarship – Master's, NSERC 2016-2017

Duncan Sayre MacInnes Memorial Scholarship, Royal Military College of Canada 2010

Publications

Thesis

R. H. Moulton. "Clustering to Improve One-Class Classifier Performance in Data Streams." Master's Thesis, University of Ottawa, 2018. Winner of the Canadian Artificial Intelligence Association's 2019 AI Master's Thesis Award.

Peer reviewed

J. Zgraja, **R.H. Moulton**, J. Gama, A. Kasprzak, and M, Woźniak, "Adapting ClusTree for more challenging data stream environments," Journal of Intelligent & Fuzzy Systems vol. 37, no. 6, pp. 7679-7688.
R. H. Moulton, "Discrete-Event Systems for Modelling Decision-Making in Human Motor Control," in Advances in Artificial Intelligence: 32nd Canadian Conference on Artificial Intelligence, Canadian AI 2019, Kingston, ON, Canada, Proceedings, M.-J. Meurs and F. Rudzicz, Eds. Kingston, Canada: Springer, Cham, 2019, pp. 584–587.
R. H. Moulton, H. L. Viktor, N. Japkowicz, and J. Gama, "Clustering in the Presence of Concept Drift," in Machine Learning and Knowledge Discovery in Databases. ECML PKDD 2018. Lecture Notes in Computer Science, vol 11051, M. Berlingerio, F. Bonchi, T. Gärtner, N. Hurley, and G. Ifrim, Eds. Dublin, Ireland: Springer, Cham, 2019, pp. 339–355. Best Student Data Mining Paper Runner Up

Not peer reviewed

R.H. Moulton, A.J. Marasco, and K. Rudie, "Limited Lookahead Policies for the Control of Discrete-Event Systems: A Tutorial," 2020, arXiv:2006.06514 [eess.SY].
R. H. Moulton, H. L. Viktor, N. Japkowicz, and J. Gama, "Contextual One-Class Classification in Data Streams," 2019, arXiv:1907.04233 [cs.LG].
R. H. Moulton and J. Zgraja, The Wilderness Area Data Set: Adapting the Covertype data set for unsupervised learning, 2019, arXiv:1901.11040 [cs.LG].

Scientific Activities

Talks
Data Mining and Society, Shad Queen's, Jul 2019
Discrete-Event Systems for Modelling Decision-Making in Human Motor Control, Canadian AI Graduate Student Symposium, May 2019
Knowledge Discovery: Applying AI in the Community, TEDxQueensu Salon: Me, Myself, A.I., Mar 2019
Clustering in the Presence of Concept Drift, ECML-PKDD, Sep 2018

Visiting Researcher
University of Porto, Student Researcher, hosted by Dr. João Gama, May 2017-Aug 2017

Academic Reviewer
Data Mining & Knowledge Discovery 2017-2019
IEEE Transactions on Knowledge and Data Engineering 2017-2018
Knowledge and Information Systems 2017-2019
Neurocomputing 2017-2018
Machine Learning 2018
IEEE Transactions on Neural Networks and Learning Systems 2018, Evolving Systems 2018

ECML-PKDD 2020 IoT Stream for Data Driven Predictive Maintenance Program Committee Member
ECML-PKDD 2019 IoT Stream for Data Driven Predictive Maintenance Program Committee Member
IEEE DSAA 2017 Program Committee Member (Research Track)

ECML-PKDD 2017 IoT Large Scale Learning from Data Streams Workshop+Tutorial Subreviewer
Canadian Space Summit 2009 Webmaster/IT Support

Open Source Projects
Massive Online Analysis, Programmer, 2017-2019

Community Involvement

Writ Large Writers' Group (Kingston)
Co-Organizer 2019-Present. Writ Large is a local writers' group focused on supporting writers from their first idea to a complete manuscript. In my role I have organized and led events including monthly critique circles, writing workshops and social meetings.

Pathways to Education (Kingston)
Tutor 2018-Present. Pathways to Education is a national charitable organization with the vision of breaking the cycle of poverty through education. I tutor high school subjects including Mathematics, Physics, Chemistry, Biology, and English on a student-initiated basis.
Data Analyst – Program Outcomes 2018-2019. As part of Pathways Kingston's Program Evaluation Team, my data analysis contributed to review of program strengths and helped to determine possible directions for expansion.

RA Curling Club (Ottawa)
Chair of the Evening Section Committee 2017-2018, Vice-Chair of the Evening Section Committee 2016-2017. As Chair of the Evening Section Committee, I was responsible for directing the administration of RA Curling Club Evening section of 200+ curlers across eight leagues and sat on the club-wide Executive Committee.
League Convener 2016-2018. As Convener of the Friday Recreational Fixed League, administered the league and coordinated with the Evening Section Committee as required.