Dave McKenney - Curriculum Vitae

Formal Education

2011-2017 **PhD Computer Science, Carleton University**
Thesis Title: *On Behaviour-based Influence Measurement and Distribution-based Network Control*

Supervisor: Dr. Tony White

Description: This thesis investigated the use of information theoretic measures to quantify influence and infer network connections based on historical action data produced within a simulated information sharing game. Additionally, this thesis proposed the idea of distribution-based network control and used reinforcement learning algorithms to produce control systems for a proposed distribution-based network control problem. Investigation of control success was completed across a range of theoretical and real-world networks.

My thesis was nominated for the Senate medal. My comprehensive exams were completed with distinction in the areas of swarm intelligence, machine learning, and information networks.

2009-2011 **Master of Computer Science, Carleton University**
Thesis Title*: Distributed and Adaptive Traffic Signal Control within a Realistic Traffic Simulation*

Passed with distinction and nominated for Senate medal

2004-2009 **Bachelor of Computer Science, Carleton University**
Graduated with Highest Honours

Completed a Minor in Psychology

Current Teaching-Related Projects

While most of my time as a first-year instructor was dedicated to preparing my courses, I have also begun work on several teaching-related projects. The first of these projects involves the incorporation of Discord – an online text, voice, and video chat service – into courses as an educational tool. We have used Discord in my courses this year to provide students the ability to connect with each other, as well as myself and TAs, to discuss course concepts and questions in a streamlined manner. Furthermore, I have started to incorporate 'bots' into these Discord servers, which allows for things such as multiple-choice trivia review, question/answer tracking, and course material search. Outside of this project, I am also beginning to work with some executive members of the Computer Science undergraduate society to develop/improve some of their existing programs, such as the 'Carleton Dev Club', which aims to provide an environment to facilitate the development of student-led projects in Computer Science.

Summary of Courses Taught and Instructor Feedback

The below table summarizes my teaching evaluation scores for each course I have taught at Carleton. Further evaluation details are available upon request.

Course	Term	Average	Median	Respondents	Enrolment
COMP 1005/1405	Summer 2019	Feedback not yet available.			
COMP 1001	Winter 2019	4.60	5	47	132
COMP 1006	Winter 2019	4.60	5	46	104
COMP 1001	Fall 2018	4.61	5	49	102
COMP 1006/1406	Fall 2018	4.43	5	70	235
COMP 1405	Fall 2018	4.82	5	100	199
COMP 1005/1405	Summer 2017	4.77	5	43	95
COMP 1005/1405	Winter 2017	4.40	5	103	255

Awards

2019	Carleton University Students' Association Teaching Excellence Award
2015-2016	Ontario Graduate Scholarship (OGS)
2014-2015	Natural Science and Engineering Research Council (NSERC) of Canada CGS-D
2013-2014	Natural Science and Engineering Research Council (NSERC) of Canada PGS-D
2012-2013	Ministry of Transportation Ontario (MTO) Highway Infrastructure Innovation Funding Program (HIIFP)
2011-2015	Carleton University Doctoral Domestic Entrance Scholarship
2010-2011	Ontario Graduate Scholarship in Science and Technology (OGSST)
2009-2011	Carleton University Masters Domestic Entrance Scholarship
2004-2008	Nortel Networks Entrance Scholarship

Certifications

Teaching	Carleton University Education Development Center Preparing to Teach Certificate
	Carleton University Education Development Center Certificate in Teaching Assistant Skills
Leadership	Sprott School of Business' Mindtrust Leadership Development Program

Publications

Peer-Reviewed Journals	McKenney, D., White, T., Towards Distribution-Based Control of Social Networks, *Computational Social Networks*, vol. 5, no. 3, 2018.
	McKenney, D., White, T., Selecting Transfer Entropy Thresholds for Influence Network Prediction, *Social Network Analysis and Mining*, vol. 7, no. 1, 2017.
	McKenney, D., White, T., Distributed and adaptive traffic signal control within a realistic traffic simulation, *Engineering Applications of Artificial Intelligence*, vol. 26, no. 1, pp. 574-583, 2013.
	McKenney, D., White, T., Stock trading strategy creation using GP on GPU. *Soft Computing,* vol. 16, no. 2, pp. 247-259, 2011.
Peer-Reviewed Conference Proceedings	McKenney, D., White, T., Observations on the role of influence in the difficulty of social network control, *ASONAM, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*, August 18-21, 2016.
	McKenney, D., White, T., Using Transfer Entropy for Influence Measurement and Network Prediction, *SocialCom, ASE Eighth International Conference on Social Computing*, pp.1-14, August 18-20, 2015.
	McKenney, D., White, T., A data dissemination protocol using route sharing, *Connected Vehicles and Expo (ICCVE), 2013 International Conference on*, pp.781-782, December 2-6, 2013.
Technical Reports	McKenney, D., White, T., Towards Distribution-Based Control of Social Networks. Technical Report TR-16-01, School of Computer Science, Carleton University, 2016.
	McKenney, D., White, T., A Store-and-Forward Dissemination Algorithm Using Locally Shared Vehicle Route Information. Technical Report TR-13-04, School of Computer Science, Carleton University, 2013.
	McKenney, D., White, T., A Review of VANET Data Dissemination and Intelligent Traffic Signal Control Strategies. Technical Report TR-13-05, School of Computer Science, Carleton University, 2013.
Conference Posters	McKenney, D., White, T., Influence Network Prediction with Transfer Entropy, *Data Day 3.0*, Carleton University, March 29, 2016.
Theses	McKenney, D., On Behaviour-based Influence Measurement and Distribution-based Network Control. PhD Thesis, Carleton University, Ottawa, Canada, 2017.
	McKenney, D., Distributed and Adaptive Traffic Signal Control within a Realistic Traffic Simulation. Master's Thesis, Carleton University, Ottawa, Canada, 2011.

Presentations

Conferences	Observations on the role of influence in the difficulty of social network control - *ASONAM 2016 - Workshop on Social Influence*, August 2016.
	Using Transfer Entropy for Influence Measurement and Network Prediction - *ASE Eighth International Conference on Social Computing*, August 2015.
	A Data Dissemination Protocol Using Route Sharing - *International Conference on Connected Vehicles and Expo*, December 2013.
Research Presentations	Behaviour-based Influence Measurement and Distribution-based Network Control - *Complex Adaptive Systems Research Group*, September 2017.
	Distribution-Based Control of the Real-Valued Voter Model - *Complex Adaptive Systems Research Group*, November 2016.
	Influence and Network Analysis with Transfer Entropy - *Complex Adaptive Systems Research Group*, October 2016.
	Combinatorial Auctions - *Complex Adaptive Systems Research Group*, July 2014.
	Data Dissemination in VANETs Inspired by Task Allocation - *Complex Adaptive Systems Research Group*, March 2013.
	Adaptive Data Dissemination and Routing in VANETs - *Complex Adaptive Systems Research Group*, January 2013.
	Data Dissemination Protocols for VANETs - *Complex Adaptive Systems Research Group*, October 2012.
	Investigating Intelligent Traffic Management Through Traffic Modelling – *Presented to the City of Ottawa's transportation services department*, February 2011.
	GP on a GPU Using CUDA - *Complex Adaptive Systems Research Group*, January 2011.
	Intelligent Traffic Control - *Complex Adaptive Systems Research Group*, October 2010.
Guest Lectures	Transfer Entropy, Influence Measurement, and Network Analysis - *Evolutionary Computing and Artificial Life - COMP 5206*, Carleton University, September 2017.
	Genetic Programming on GPU Devices - *Evolutionary Computing and Artificial Intelligence - COMP 4107*, Carleton University, October 2014.
	Object Design and Encapsulation - *Introduction to Computer Science II - COMP 1406*, Carleton University, October 2014.

Other Work Experience

2016-2018 **Lab and Course Coordinator - School of Computer Science, Carleton University**
As a lab and course coordinator at Carleton, I am responsible for managing lab-based tutorials for several courses. I am also responsible for overseeing the work of 20+ teaching assistants within these courses to ensure a consistently high-quality learning experience for students. In addition to this, I provide feedback relating to course content and student success to instructors, allowing them to address specific needs of the courses that may have went unnoticed otherwise.

2017 **Contract Instructor - School of Computer Science, Carleton University**
I was the instructor for Introduction to Computer Science I at Carleton University for both the Winter 2017 and Summer 2017 terms. This course is an introduction to Computer Science, covering topics such as algorithm development, pseudocode, and introductory computer programming.

2009-2016 **Teaching Assistant - School of Computer Science, Carleton University**
I was a Teaching Assistant at Carleton University for seven years. During this time, my duties ranged from teaching students in a one-on-one setting to running tutorials of 50+ students in courses ranging from first to fourth year. Courses that I have been a Teaching Assistant for include: Introduction to Computer Science I and II, Object-Oriented Software Engineering, Fundamentals of Web Applications, Principles and Practices of Distributed Programming, Mobile Multimedia, and Artificial Intelligence.

2011-2013 **Teaching Assistant Mentor - School of Computer Science, Carleton University**
My success as a Teaching Assistant led me to be appointed the Teaching Assistant Mentor for the School of Computer Science for a two-year period from 2011-2013. In my mentoring role, I was responsible for developing a TA training plan, creating/presenting training workshops, and providing support to TAs.

2009-2017 **Research Assistant - School of Computer Science, Carleton University**
I worked as a Research Assistant as part of the Complex Adaptive Systems research group at Carleton University under the supervision of Dr. Tony White from 2009 until 2017. As a member of the CAS group, I regularly take part in research meetings where I am responsible for both presenting new research and results, as well as contributing feedback to the work of other members.

2009 **Lead Developer - Dainty Productions, Inc.**
I worked with the head of the company to design and develop their first mobile app, Super Star Tap for iOS. Within this project, I was responsible for all of the software development. The creation of this app helped the company break into the mobile domain, which is now a major source of revenue.

2008-2009 **Poker Blogger and Software Reviewer - FlopTurnRiver.com**
I was responsible for writing detailed reviews of available poker software. I also covered high-stakes online poker and various other online poker events.