
Assistant Professor
Department of Computing Science
University of Alberta
Edmonton, Alberta

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RESEARCH INTERESTS **Reinforcement learning**, representation learning, time series prediction, computational sustainability.

ACADEMIC POSITIONS **Assistant Professor** 2017-present
Department of Computing Science, Faculty of Science, University of Alberta

Assistant Professor 2015-2017
Department of Computer Science, School of Informatics and Computing, Indiana University Bloomington

EDUCATION **The University of Alberta**, Edmonton, Alberta, Canada

 Ph.D., Computing Science, January 2010-December 2014
Supervisors: Professor Michael Bowling and Professor Dale Schuurmans

 M.Sc. Computing Science, September 2008-December 2009

 B.S.c, Honors Mathematics with First Class Honors, 2008

 B.S.c, Honors Computing Science with First Class Honors, 2008

PUBLICATIONS **Refereed Journal and Conference Articles**

- [1] An Off-policy Policy Gradient Theorem Using Emphatic Weightings. E. Imani, E. Graves and M. White. *Advances in Neural Information Processing Systems (NIPS)*, 2018.
- [2] Supervised autoencoders: Improving generalization performance with unsupervised regularizers. L. Le, A. Patterson and M. White. *Advances in Neural Information Processing Systems (NIPS)*, 2018.
- [3] Context-dependent upper-confidence bounds for directed exploration. R. Kumaraswamy, M. Schlegel, A. White and M. White. *Advances in Neural Information Processing Systems (NIPS)*, 2018.
- [4] Improving Regression Performance with Distributional Losses. E. Imani and M. White. *International Conference on Machine Learning (ICML)*, 2018.
- [5] Reinforcement Learning with Function-Valued Action Spaces for Partial Differential Equation Control. Y. Pan, A. Farahmand, M. White, S. Nabi, P. Grover, D. Nikovski. *International Conference on Machine Learning (ICML)*, 2018.
- [6] Organizing experience: a deeper look at replay mechanisms for sample-based planning in continuous state domains. Y. Pan, M. Zaheer, A. White, A. Patterson, M. White. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2018.
- [7] High-confidence error estimates for learned value functions. T. Sajed, W. Chung and M. White. *Uncertainty in Artificial Intelligence (UAI)*, 2018.

- [8] Comparing Direct and Indirect Temporal-Difference Methods for Estimating the Variance of the Return. C. Sherstan, D. Ashley, B. Bennet, K. Young, A. White, M. White, R. Sutton. *Uncertainty in Artificial Intelligence (UAI)*, 2018.
- [9] Multi-view Matrix Factorization for Linear Dynamical System Estimation. M. Karami, M. White, D. Schuurmans and C. Szepesvari. *Advances in Neural Information Processing Systems (NIPS)*, 2017.
- [10] Unifying task specification in reinforcement learning. M. White. *International Conference on Machine Learning (ICML)*, 2017.
- [11] Adapting kernel representations online using submodular maximization. M. Schlegel, Y. Pan and M. White. *International Conference on Machine Learning (ICML)*, 2017.
- [12] Effective sketching methods for value function approximation. Y. Pan, E. Sadeqi Azer and Martha White. *International Conference on Uncertainty in AI (UAI)*, 2017.
- [13] Learning sparse representations in reinforcement learning with sparse coding. Lei Le, Raksha Kumaraswamy, and Martha White. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2017.
- [14] Accelerated Gradient Temporal Difference Learning. Y. Pan, A. White and M. White. *AAAI Conference on Artificial Intelligence (AAAI)*, 2017.
- [15] Recovering true classifier performance in positive-unlabeled learning. S. Jain, M. White, P. Radivojac. *AAAI Conference on Artificial Intelligence (AAAI)*, 2017.
- [16] Estimating the class prior and posterior from noisy positives and unlabeled data. S. Jain, M. White, P. Radivojac. *Advances in Neural Information Processing Systems (NIPS)*, 2016.
- [17] Investigating practical, linear temporal difference learning. A. White and M. White. *International Conference on Autonomous Agents and Multi-agent Systems (AAMAS)*, 2016.
- [18] A greedy approach to adapting the trace parameter for temporal difference learning. A. White and M. White. *International Conference on Autonomous Agents and Multi-agent Systems (AAMAS)*, 2016.
- [19] Incremental Truncated LSTD. C. Gehring, Y. Pan and M. White. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2016.
- [20] An emphatic approach to the problem of off-policy temporal-difference learning. R. Sutton, A.R. Mahmood, M. White. *Journal of Machine Learning Research*, 2016.
- [21] Scalable Metric Learning for Co-embedding. F. Mirzazadeh, M. White, A. Gyorgy and D. Schuurmans. *In ECML PKDD*, 2015.
- [22] Optimal Estimation of Multivariate ARMA Models. M. White, J. Wen, M. Bowling and D. Schuurmans. *AAAI Conference on Artificial Intelligence (AAAI)*, 2015.
- [23] Partition Tree Weighting. J. Veness, M. White, M. Bowling, and A. Gyorgy. *Data Compression Conference*, 2013.
- [24] Convex Multiview Subspace Learning. M. White, Y. Yu, X. Zhang, D. Schuurmans. *Advances in Neural Information Processing Systems (NIPS)*, 2012.
- [25] Off-Policy Actor-Critic. T. Degris, M. White and R. S. Sutton. *International Conference on Machine Learning (ICML)*, 2012.

- [26] Generalized Optimal Reverse Prediction. M. White and D. Schuurmans. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2012.
- [27] Convex Sparse Coding, Subspace Learning, and Semi-Supervised Extensions. X. Zhang, Y. Yu, M. White, R. Huang, and D. Schuurmans. *AAAI Conference on Artificial Intelligence (AAAI)*, 2011.
- [28] Interval Estimation for Reinforcement-Learning Algorithms in Continuous-State Domains. M. White and A. White. *Advances in Neural Information Processing Systems (NIPS)*, 2010.
- [29] Relaxed Clipping: A Global Training Method for Robust Regression and Classification. Y. Yu, M. Yang, L. Xu, M. White, D. Schuurmans. *Advances in Neural Information Processing Systems (NIPS)*, 2010.
- [30] Optimal Reverse Prediction: A Unified Perspective on Supervised, Unsupervised and Semi-supervised Learning. L. Xu, M. White and D. Schuurmans. *International Conference on Machine Learning (ICML)*, 2009. **Honourable Mention for Best Paper**
- [31] Learning a Value Analysis Tool For Agent Evaluation. M. White and M.I Bowling. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2009.

Theses

M. White. **Regularized factor models.** PhD thesis, University of Alberta. Received the Faculty of Science Doctoral Dissertation Award.

M. White. **A General Framework for Reducing Variance in Agent Evaluation.** Master's thesis, University of Alberta.

AWARDS

Reviewing Award, International Conference on Machine Learning, 2015

Faculty of Science Doctoral Dissertation Award, 2015

Honourable Mention for Best Paper at the International Conference on Machine Learning, 2009

Several national and provincial scholarships for graduate studies, including

NSERC CGS D (2012) — 70,000 over two years in PhD, 2012, 233 offered in Canada

Honorary Izaak Walton Killam Memorial Scholarship (2012)

Alberta Innovates Scholarship for PhD (2010) — 72,000 over two years in PhD, 2010, in top 5% of accepted applicants

NSERC CGS M (2008) — 35,000 over two years in MSc, 2008, 713 offered in Canada

Alberta Innovates Scholarship (2008) — 25,000 over two years in MSc, 2008, in top 10% of accepted applicants

RESEARCH GRANTS

NSERC Discovery Grant and Discovery Accelerator. 2018-2021
\$120,000 + 150,000 total for three years. Sole PI. "Sparse representations for reinforcement learning."

NSERC CRD 2018-2021
\$536,700 total for three years. Sole PI. "Optimizing water treatment operation using reinforcement learning."

NSF CISE CRII grant. 2016-2018
\$174,616 total for two years. Sole PI. "Accelerated stochastic approximation for reinforcement learning."

Precision Health Initiative. 2016-2020
\$60,000 per year (funding for two students), for four years. Joint with the School of Informatics and Computing and the School of Medicine.

- INVITED TALKS *Off-policy Learning*. Reinforcement Learning Summer School, Toronto, August 2018.
- Upper Confidence Bounds on Action-Values*. Exploration in Reinforcement Learning, ICML Workshop, Sweden, July 2018.
- An RNN Architecture using Value Functions*. Credit assignment in Deep Learning and Deep Reinforcement Learning, ICML Workshop, Sweden, July 2018.
- Predictive representations*. Learning in Machines and Humans, Bloomington, USA, May 2018.
- Planning in reinforcement learning with learned models in Dyna*. Generative Models for Reinforcement Learning, Data Learning and Inference Workshop, Canary Islands, April 2018.
- General Value Function Networks*. The Barbados Workshop on Reinforcement Learning, February 2018.
- Unifying task specification in reinforcement learning*. Oxford (Department colloquium), Imperial College London and Google Deepmind London, July 2017.
- Adapting kernel representations online using submodular maximization*. Washington University in St. Louis, Machine Learning colloquium, March 2017.
- Insights on learning representations with dictionary learning and autoencoders*. University of Maryland, Computational Linguistics and Information Processing colloquium, November 2016.
- Accelerated Gradient Temporal Difference Learning*. Presented at University of Texas at Austin, November 2016 and then again at the Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM), December 2016.
- Beyond experts and engineering: exploiting data for automated control*. Presented at multiple universities in 2014-2015, including University of Texas at Austin, University of Rochester, Virginia Tech, University of Virginia, Worcester Polytechnic Institute, University of Iowa, University of Connecticut and Dartmouth College.
- Generalized Optimal Reverse Prediction*. Google New York, August 2012
- Linear Off-Policy Actor Critic*. The 7th Barbados Workshop on Reinforcement Learning, April 2012
- Learning a Value Analysis Tool For Agent Evaluation*. International Joint Conference of Artificial Intelligence, July 2009 and MITACS, June 2009

ACADEMIC
SERVICE

- Program Committee Member** 2014 - Present
- International Conference on Machine Learning (ICML), 2016-2018
- Advances in Neural Information Processing Systems (NIPS), 2015-2018
- AAAI Conference on Artificial Intelligence (AAAI), 2014-2018
- International Joint Conference of Artificial Intelligence (IJCAI), 2015-2018
- International Conference on AI and Statistics (AISTATS), 2017
- Int. Conf. on Autonomous Agents and Multi-agent Systems (AAMAS), 2017
- Reviewer** 2009 - Present
- Conferences:** AAAI, AISTATS, AAMAS, ICLR, ICML, IJCAI, NIPS, UAI, CORL
- Journals:** Journal of Machine Learning Research, 2014-2017
- Machine Learning Journal, 2014
- Journal of Artificial Intelligence Research, 2014, 2016, 2017
- Artificial Intelligence Journal, 2014

Journal of Autonomous Agents and Multi-agent Systems, 2016
 Transactions on Image Processing, 2014
 IEEE Transactions on Neural Networks and Learning Systems, 2014
 Stochastic Environmental Research and Risk Assessment, 2017

NSF panel member 2015, 2016
 Reviewed IIS: Robust Intelligence (RI) proposals on Machine Learning

UNIVERSITY
SERVICE

Departmental Service at the University of Alberta
 Faculty Recruiting Committee 2017-2018

University Service at Indiana University
 Faculty Hiring Committee for Statistics (consulting role) 2015-2016
 Panel for new Phd Students 2016
 Panel for Women in Computing 2015

Departmental Service at Indiana University
 Faculty Affairs Committee 2016-Present
 Undergraduate Education Committee 2016-Present
 - Redesigned Artificial Intelligence specialization for undergrads
 - Introduced two courses, Data Mining (B365) and Machine Learning (B455)
 Faculty Hiring Committee 2015-2016

SUPERVISION

PhD students
 Raksha Kumaraswamy 2016-present
 Lei Le 2015-present
 Yangchen Pan 2015-present
 Andrew Patterson 2018-present
 Matthew Schlegel 2017-present

MSc students
 Farzane Aminmansour 2018-present
 James Bell 2017-present
 Wesley Chung 2017-present
 Ehsan Imani 2017-present
 Taher Jaferfee 2017-present
 Sungsu Lim 2017-present
 Vincent Liu 2017-present
 Somjit Nath 2017-present
 Niko Yasui 2017-present
 Muhammad Zaheer 2017-present
 Andrew Patterson 2017-2018
 Matthew Schlegel 2016-2017

Undergraduate researchers
 Andrew Jacobsen 2018-present
 Wenzhang Qian 2017-present
 Andrew Patterson 2015-2017
 Abraham Dasilvio 2016
 Tyrese Taylor 2016

Supervisory committee (PhD): Jeffrey Kane Johnson (2017), Pegah Fakhari (2018),
 Shantanu Jain (2018), Katherine Metcalf, Can Liu, Zeeshan Ali Sayyed, Madhavun Can-
 dadai Vasu, Mingze Xu, Inhak Hwang, Jiecao Chen, Nadia Ady

TEACHING EXPERIENCE	CMPUT 466/551: Machine Learning University of Alberta.	Fall 2017	
	CSCI B455: Principles of Machine Learning Indiana University.	Spring 2017	
	CSCI B555: Machine Learning Indiana University.	Fall 2015, 2016	
	CSCI B659: Stochastic optimization for machine learning Indiana University.	Spring 2016	
	CSCI B554: Probabilistic Approaches to AI Indiana University.	Spring 2015	
	CMPUT 379: Operating Systems Concepts University of Alberta. Instructor rating: 4.9/5.0	Winter 2013	
OUTREACH	Research for underrepresented groups Worked with two undergraduate students (Abraham Dasilvio and Tyrese Taylor) from Bethune-Cookman University, funded under an REU from my NSF grant.		
	Workshops for youth Presented to high school students about life as an undergraduate and graduate student in Computing Science (WP Wagner panel for Physical Sciences). 2011 Volunteered for a Women in Scholarship, Engineering, Science and Technology (WISEST) open house promoting diversity in Computing Science. 2011 Read to grade 3-6 students for a Read-In program promoting literacy. 2010 Held a workshop for junior high girls illustrating interesting aspects of theoretical Computing Science, under Women in Technology (WIT). 2007		
	Tutor Tutoring children in an aboriginal high school with Frontier College. 2013 Tutored children from grades 1 to 12 and first year university in mathematics, physics, statistics, chemistry, biology, English and French. 2006 Tutored grade 5 girls in mathematics for the <i>Studdy Buddy Program</i> . 2005		
	INDUSTRIAL EXPERIENCE	Software Engineering Internship at Google.	Summer 2012
		PFM Scheduling company. Part of the initial technical team for nurse scheduling for Alberta Health Services, that led to the spin-off for this company. http://pfmscheduling.com	2010-2012