Martha White

Curriculum vitae

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] M. White. **Unifying task specification in reinforcement learning**. *Accepted to the International Conference on Machine Learning (ICML)*, 2017.

[2] M. Schlegel, Y. Pan and M. White. **Adapting kernel representations online using submodular maximization**. *Accepted to the International Conference on Machine Learning (ICML)*, 2017.

[3] L. Le, R. Kumaraswamy, and M. White. **Learning sparse representations in reinforcement learning with sparse coding**. *In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2017.

[4] Y. Pan, A. White and M. White. **Accelerated Gradient Temporal Difference Learning**. *In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2017.

[5] S. Jain, M. White, P. Radivojac. **Recovering true classifier performance in positive-unlabeled learning**. *In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2017.

[6] S. Jain, M. White, P. Radivojac. **Estimating the class prior and posterior from noisy positives and unlabeled data**. *In Advances in Neural Information Processing Systems (NIPS)*, 2016.

[7] A. White and M. White. **Investigating practical, linear temporal difference learning**. *In Proceedings of the International Conference on Autonomous Agents and Multi-agent Systems (AAMAS)*, 2016.

[8] A. White and M. White. **A greedy approach to adapting the trace parameter for temporal difference learning**. *In Proceedings of the International Conference on Autonomous Agents and Multi-agent Systems (AAMAS)*, 2016.

[9] C. Gehring, Y. Pan and M. White. **Incremental Truncated LSTD**. *In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2016.

[10] R. Sutton, A.R. Mahmood, M. White. **An emphatic approach to the problem of off-policy temporal-difference learning**. *Journal of Machine Learning Research*, 2016.

[11] F. Mirzazadeh, M. White, A. Gyorgy and D. Schuurmans. **Scalable Metric Learning for Co-embedding**. *In ECML PKDD*, 2015.

[12] M. White, J. Wen, M. Bowling and D. Schuurmans. **Optimal Estimation of Multivariate ARMA Models**. *In Proceedings of the 29th AAAI Conference on Artificial Intelligence (AAAI)*, 2015.

[13] J. Veness, M. White, M. Bowling, and A. Gyorgy. **Partition Tree Weighting**. Data Compression Conference, 2013.

[14] M. White, Y. Yu, X. Zhang, D. Schuurmans. **Convex Multiview Subspace Learning**. *In Advances in Neural Information Processing Systems (NIPS)*, 2012.

[15] T. Degris, M. White and R. S. Sutton. **Off-Policy Actor-Critic**. *In Proceedings of the International Conference on Machine Learning(ICML)*, 2012.

[16] M. White and D. Schuurmans. **Generalized Optimal Reverse Prediction**. *In Proceedings of the Fifteenth International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2012.

[17] X. Zhang, Y. Yu, M. White, R. Huang, and D. Schuurmans. **Convex Sparse Coding, Subspace Learning, and Semi-Supervised Extensions**. *In Proceedings of the 25th AAAI Conference on Artificial Intelligence (AAAI)*, 2011.

[18] M. White and A. White. **Interval Estimation for Reinforcement-Learning Algorithms in Continuous-State Domains**. *In Advances in Neural Information Processing Systems (NIPS)*, 2010.

[19] Y. Yu, Min Yang, Linli Xu, M. White, D. Schuurmans. **Relaxed Clipping: A Global Training Method for Robust Regression and Classification**. *In Advances in Neural Information Processing Systems (NIPS)*, 2010.

[20] L. Xu, M. White and D. Schuurmans. **Optimal Reverse Prediction: A Unified Perspective on Supervised, Unsupervised and Semi-supervised Learning**. *In Proceedings of the International Conference on Machine Learning (ICML)*, 2009. **Honourable Mention for Best Paper**

[21] M. White and Michael Bowling. **Learning a Value Analysis Tool For Agent Evaluation**. *In Proceedings of the 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

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

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), 2016-2017
Neural Information Processing Systems (NIPS), 2015-2017
AAAI Conference on Artificial Intelligence (AAAI), 2014-2017
International Joint Conference of Artificial Intelligence (IJCAI), 2015-2017
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
Journals: Journal of Machine Learning Research, 2014-2016
Machine Learning Journal, 2014
Journal of Artificial Intelligence Research, 2014, 2016
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

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
Matthew Schlegel 2017-present

MSc students
Andrew Patterson 2017-present
Matthew Schlegel 2016-present

Undergraduate researchers
Andrew Patterson 2015-2017
Abraham Dasilvio 2016
Tyrese Taylor 2016

Teaching Experience

CSCI B455: Principles of Machine Learning Spring 2017
Indiana University.

CSCI B555: Machine Learning Fall 2015, 2016
Indiana University.

CSCI B659: Stochastic optimization for machine learning Spring 2016
Indiana University.

CSCI B554: Probabilistic Approaches to AI Spring 2015
Indiana University.

CMPUT 379: Operating Systems Concepts Winter 2013
University of Alberta. Instructor rating: 4.9/5.0

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 *Studdy Buddy Program*. 2005

Industrial Experience

Software Engineering Internship at Google. Summer 2012

PFM Scheduling company. 2010-2012
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`