Scott P. Sanner

CONTACT INFORMATION

Statistical Machine Learning and AI Groups
NICTA and the Australian National University
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OBJECTIVE

Computer Science research and education in areas related to Artificial Intelligence, Machine & Reinforcement Learning, and Information Retrieval.

CITIZENSHIP

US Citizen; Australian Permanent Resident; married to a Canadian citizen

EDUCATION

University of Toronto, Toronto, ON, Canada

Ph.D., Computer Science (Mar. 2008)

- Thesis Topic: *First-order Markov Decision Processes*
- Thesis Supervisor: Craig Boutilier
- Cumulative GPA: 4.08 / 4.33

Stanford University, Stanford, CA, USA

M.S., Computer Science (Jun. 2002)

- Specialization: Artificial Intelligence
- Research Topic: *Efficient Reasoning for the Semantic Web*
- Research Supervisor: Richard Fikes
- Cumulative GPA: 3.86 / 4.33

Carnegie Mellon University, Pittsburgh, PA, USA

B.S., Computer Science (Dec. 1999)
B.S., Electrical and Computer Engineering (Dec. 1999)

- Honors Thesis Topic: *Human Models of Reinforcement Learning*
- Honors Thesis Supervisor: John R. Anderson
- Cumulative GPA: 3.92 / 4.00 (University Honors)

EMPLOYMENT

NICTA, Canberra, ACT, Australia

Senior Researcher, Supervisor: Bob Williamson **Jul. 2010 – present**
Researcher, Supervisors: Alex Smola, Wray Buntine **Jul. 2007 – Jul. 2010**

- Research on sequential decision theory, probabilistic inference, machine learning, and information retrieval applied to social media recommendation, preference elicitation, interactive visual text analysis, and operations research.

The Australian National University, Canberra, ACT, Australia

Adjunct Research Fellow, Dept. Head: Henry Gardner **Jul. 2007 – present**

- Course lecturing.
- PhD student supervision.
- Bachelors and Masters project supervision.

Microsoft Research, Cambridge, Cambridge, UK

Intern, Supervisors: Thore Graepel, Ralf Herbrich **Sep. 2006 – Dec. 2006**

- Design and empirical evaluation of classification and conditional random field (CRF) algorithms for learning with hierarchical features.
- Implementation and integration of algorithms in existing C# codebase.

Toyota Technological Institute at Chicago, Chicago, IL, USA

Intern, Supervisor: David McAllester **May 2004 – Aug. 2004**

- Design and theoretical exploration of an affine extension to the algebraic decision diagram (ADD) data structure.
- Application of this data structure to optimal probabilistic inference for Bayesian networks and sequential decision making in stochastic processes.

Sun Microsystems Research Labs, Burlington, MA, USA

Intern, Supervisor: William A. Woods **May 2002 – Aug. 2002**
May 2001 – Aug. 2001
May 1999 – Aug. 1999

- Instrumentation of existing C++ web search codebase for timing and resource load experiments used in algorithm analysis and optimization.
- Co-design of an efficient algorithm for natural language indexing of web pages.

Lawrence Livermore National Labs, US Dept. of Energy, Livermore, CA, USA

Research Programmer **Jan. 2000 – Sep. 2000**

- Co-development of an autonomous network vulnerability inference system for integrating network data collection with real-time vulnerability detection.
- Development and integration of Java, Oracle, and LISP systems under a unified architecture.

Lockheed Martin, Gaithersburg, MD, USA

Intern **May 1998 – Aug. 1998**

- Design, C++ coding, and verification of optimization and numerical methods for a mathematical model of satellite control.
- Data analysis and numerical algorithm prototyping.

National Cancer Institute, Frederick, MD, USA

Intern **May 1997 – Aug. 1997**

- Matlab/C programming and design of graphical user interface tools for automated data analysis in structural protein chemistry experiments.
- Implementation of numerical and signal processing algorithms.

Publications

L. G. Rocha Vianna, S. Sanner, and L. N. de Barros. Bounded approximate symbolic dynamic programming for hybrid MDPs. In *In Proceedings of the 29th Conference on Uncertainty in Artificial Intelligence (***UAI-13***)*, Bellevue, USA, 2013

T. Nguyen and S. Sanner. Algorithms for direct 0-1 loss optimization in binary classification. In *In Proceedings of the 30th International Conference on Machine Learning (***ICML-13***)*, Atlanta, USA, 2013

R. Mehrotra, S. Sanner, W. Buntine, , and L. Xie. Improving LDA topic models for microblogs via automatic tweet labeling and pooling. In *In Proceedings of the 30th International Conference on Machine Learning (***SIGIR-13***)*, Dublin, Ireland, 2013

E. Abbasnejad, S. Sanner, E. V. Bonilla, and P. Poupart. Learning community-based preferences via dirichlet process mixtures of gaussian processes. In *In Proceedings of the 23rd International Joint Conference on Artificial Intelligence (***IJCAI-13***)*, Beijing, China, 2013

Z. Zamani, S. Sanner, K. V. Delgado, and L. Nunes de Barros. Robust optimization for hybrid MDPs with state-dependent noise. In *In Proceedings of the 23rd International Joint Conference on Artificial Intelligence (***IJCAI-13***)*, Beijing, China, 2013

Z. Zamani, S. Sanner, P. Poupart, and K. Kersting. Symbolic dynamic programming for continuous state and observation pomdps. In *In Proceedings of the 26th Annual Conference on Advances in Neural Information Processing Systems (***NIPS-12***)*, Lake Tahoe, Nevada, 2012

J. Noel, S. Sanner, K-N. Tran, P. Christen, L. Xie, E. Bonilla, E. Abbasnejad, and N. Della Penna. New objectives for social collaborative filtering. In *21st International Conference on the World Wide Web (***WWW-12***)*, Lyon, France, 2012

S. Sanner and E. Abbasnejad. Symbolic variable elimination for discrete and continuous graphical models. In *In Proceedings of the 26th AAAI Conference on Artificial Intelligence (***AAAI-12***)*, Toronto, Canada, 2012

Z. Zamani, S. Sanner, and C. Fang. Symbolic dynamic programming for continuous state and action mdps. In *In Proceedings of the 26th AAAI Conference on Artificial Intelligence (***AAAI-12***)*, Toronto, Canada, 2012

K.-W. Lim, S. Sanner, and S. Guo. On the mathematical relationship between expected n-call@k and the relevance vs. diversity trade-off. In *In Proceedings of the 35th Annual ACM SIG Information Retrieval Conference (***SIGIR-12***)*, Portland, USA, 2012

S. Guo, S. Sanner, T. Graepel, and W. Buntine. Score-based bayesian skill learning. In *In Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (***ECML/PKDD-12***)*, Bristol, UK, 2012

A. Coles, A. Coles, A. García Olaya, S. Jiménez, C. Linares López, S. Sanner, and S. Yoon. A survey of the seventh international planning competition. *Artificial Intelligence Magazine (***AI Magazine***)*, 33(1):83–88, 2012

S. Sanner and M. Hutter, editors. *Proceedings of the 9th European Workshop on Reinforcement Learning (***EWRL***) 2011, Athens, Greece, September 9-11, 2011*, volume 7188 of *Lecture Notes in Computer Science*. Springer, 2012

S. Sanner, S. Guo, T. Graepel, S. Kharazmi, and S. Karimi. Diverse retrieval via greedy optimization of expected 1-call@k in a latent subtopic relevance model. In *20th ACM Conference on Information and Knowledge Management (***CIKM-11***)*, Glasgow, UK, 2011

S. Sanner, K. V. Delgado, and L. Nunes de Barros. Symbolic dynamic programming for discrete and continuous state MDPs. In *In Proceedings of the 27th Conference on Uncertainty in Artificial Intelligence (***UAI-11***)*, Barcelona, Spain, 2011

B. Ahmadi, K. Kersting, and S. Sanner. Multi-evidence lifted message passing with application to pagerank and the kalman filter. In *In Proceedings of the 22nd International Joint Conference on Artificial Intelligence (***IJCAI-11***)*, 2011

M. Robards, P. Sunehag, S. Sanner, and B. Marthi. Sparse kernel-SARSA(lambda) with an eligibility trace. In *In Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (***ECML/PKDD-11***)*, 2011

K. V. Delgado, S. Sanner, and L. Nunes de Barros. Efficient solutions to factored MDPs with imprecise transition probabilities. *Artificial Intelligence Journal (***AI Journal***)*, 175:1498–1527, 2011

K. Valdivia Delgado, L. Nunes de Barros, F. G. Cozman, and S. Sanner. Using mathematical programming to solve factored Markov decision processes with imprecise probabilities. *International Journal of Approximate Reasoning (***IJAR***)*, 52(7):1000–1017, 2011

E. Bonilla, S. Guo, and S. Sanner. Gaussian process preference elicitation. In *Advances in Neural Information Processing Systems 24 (***NIPS-10***)*, Vancouver, Canada, 2010. MIT Press

S. Sanner and K. Kersting. Symbolic dynamic programming for first-order POMDPs. In *In Proceedings of the 24th AAAI Conference on Artificial Intelligence (***AAAI-10***)*, Atlanta, Georgia, July 19-23 2010. AAAI Press

C. Downey and S. Sanner. Temporal difference Bayesian model averaging: A Bayesian perspective on adapting lambda. In *In Proceedings of the 27th International Conference on Machine Learning (***ICML-10***)*, Haifa, Israel, June 21-24 2010

S. Guo and S. Sanner. Probabilistic latent maximal marginal relevance. In *Proceedings of the 33rd Annual ACM SIG Information Retrieval Conference (***SIGIR-10***)*, Geneva, Switzerland, July 11-15 2010. ACM

S. Guo and S. Sanner. Real-time multiattribute Bayesian preference elicitation with pairwise comparison queries. In *Proceedings of the 13th International Conference on Artificial Intelligence and Statistics (***AISTATS-10***)*, volume 9, pages 289–296, Sardinia, Italy, May 13-15 2010

S. Sanner, W. Uther, and K. V. Delgado. Approximate dynamic programming with Affine ADDs. In *Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (***AAMAS-10***)*, Toronto, Canada, 2010

S. Sanner and K. Kersting. Symbolic dynamic programming. In **Encyclopedia of Machine Learning**. Springer-Verlag, 2010

K. V. Delgado, S. Sanner, L. Nunes de Barros, and F. G. Cozman. Efficient solutions to factored MDPs with imprecise transition probabilities. In *Proceedings of the 19th Conference on Automated Planning and Scheduling (***ICAPS-09***)*, 2009

S. Sanner, R. Goetschalckx, K. Driessens, and G. Shani. Bayesian real-time dynamic programming. In Boutilier, editor, *21st International Joint Conference on Artificial Intelligence (***IJCAI-09***)*, pages 1–8, Pasadena, USA, July 2009

S. Sanner and C. Boutilier. Practical solution techniques for first-order MDPs. *Artificial Intelligence Journal (***AI Journal***)*, December 2009

R. Goetschalckx, S. Sanner, and K. Driessens. Reinforcement learning with the use of costly features. **Lecture Notes in Computer Science**, 5323:124–135, November 2008

R. Goetschalckx, S. Sanner, and K. Driessens. Cost-sensitive parsimonious linear regression. In *Proceedings of the 8th IEEE International Conference on Data Mining (***ICDM-08***)*, pages 809–814. IEEE Computer Society, 2008

R. Goetschalckx, S. Sanner, and K. Driessens. Reinforcement learning with the use of costly features. In *European Conference on Artificial Intelligence (***ECAI-08***)*, 2008

S. Sanner and C. Boutilier. Approximate solution techniques for factored first-order MDPs. In *Proceedings of the 17th Conference on Automated Planning and Scheduling (***ICAPS-07***)*, 2007

S. Sanner, T. Graepel, R. Herbrich, and T. Minka. Learning CRFs with hierarchical features: An application to the game of go. In *Proceedings of the Workshop on Constrained Optimization and Structured Output Spaces (***WCSOS-07***)*, 2007

S. Sanner and C. Boutilier. Practical linear value-approximation techniques for first-order MDPs. In *Proceedings of the 22nd Conference on Uncertainty in AI (***UAI-06***)*, 2006

S. Sanner and S. McIlraith. An ordered theory resolution calculus for hybrid reasoning in first-order extensions of description logic. In *Proceedings of the 10th International Conference on Principles of Knowledge Representation and Reasoning (***KR-06***)*, 2006

S. Sanner. Online feature discovery in relational reinforcement learning. In *Proceedings of the Open Problems in Statistical Relational Learning Workshop (***SRL-06***)*, 2006

S. Sanner and D. McAllester. Affine algebraic decision diagrams (AADDs) and their application to structured probabilistic inference. In *Proceedings of the 19th International Joint Conference on AI (***IJCAI-05***)*, 2005

S. Sanner and C. Boutilier. Approximate linear programming for first-order MDPs. In *Proceedings of the 21st Conference on Uncertainty in AI (***UAI-05***)*, 2005

S. Sanner. Simultaneous learning of structure and value in relational reinforcement learning. In *Proceedings of the Rich Representations for Relational Reinforcement Learning Workshop (***RRfRL-05***)*, 2005

D. Anguelov, R. Biswas, D. Koller, B. Limketkai, S. Sanner, and S. Thrun. Learning hierarchical object maps of non-stationary environments with mobile robots. In *Proceedings of the 18th Conference on Uncertainty in AI (***UAI-02***)*, 2002

R. Biswas, B. Limketkai, S. Sanner, and S. Thrun. Towards object mapping in dynamic environments with mobile robots. In *Proceedings of the Conference on Intelligent Robots and Systems (***IROS-02***)*, 2002

S. Sanner, J. R. Anderson, C. Lebiere, and M. Lovett. Achieving efficient and cognitively plausible learning in backgammon. In *Proceedings of the 17th International Conference on Machine Learning (***ICML-00***)*, 2000

Tech Reports / Unpublished

S. Sanner. Relational Dynamic Influence Diagram Language (RDDL): Language description — http://users.cecs.anu.edu.au/~ssanner/IPPC_2011/RDDL.pdf. Technical report, NICTA, 2010

S. Sanner. Future directions for first-order decision-theoretic planning. Research Proposal, University of Toronto, 2005

S. Sanner. Relational and first-order decision-theoretic planning: Foundations and future directions. Depth Report, University of Toronto, 2004

S. Sanner. Refutation-complete binary decision diagrams. Unpublished Manuscript, University of Toronto, 2004

S. Sanner. Towards practical taxonomic classification for description logics on the Semantic Web. Technical Report KSL-03-06, Stanford University, Knowledge Systems Lab, 2003

Courses Taught

- **Knowledge Representation and Reasoning** (part of AI), ANU **Fall 2013**
- **Document Analysis**, ANU **Spring 2012**
- **Knowledge Representation and Reasoning** (part of AI), ANU **Fall 2012**
- **Document Analysis**, ANU **Spring 2011**
- **Knowledge Representation and Reasoning** (part of AI), ANU **Fall 2011**
- **Knowledge Representation and Reasoning** (part of AI), ANU **Fall 2010**
- **Knowledge Representation and Reasoning** (part of AI), ANU **Fall 2009**
- **Reinforcement Learning and Planning**, ANU **Spring 2008**
- **Introduction to Statistical Machine Learning**, ANU **Fall 2008**

Professional Activities

Journal Editorial Board Memberships

- Machine Learning Journal (MLJ) (Appointed 2010 – 2013)
- Journal of AI Research (JAIR) (Appointed 2011 – 2014)

Journal Reviewing

- Journal of Machine Learning Research (JMLR)
- Machine Learning Journal (MLJ)
- Journal of AI Research (JAIR)
- AI Journal (AIJ)
- Annals of Mathematics and AI (AMAI)
- Computational Intelligence (CI)
- Information Sciences (IS)
- Journal of Algorithms

Conference Senior Program Committees

- Association for the Advancement of Artificial Intelligence (AAAI) (2013)
- Intern. Joint Conf. on Artificial Intelligence (IJCAI) (2011 – 2013)
- Intern. Conf. on Automated Planning and Sched. (ICAPS) (2013)

Conference Program Committees

- Association for the Advancement of Artificial Intelligence (AAAI) (2010 – 2013)
- Intern. Joint Conf. on Artificial Intelligence (IJCAI) (2009 – 2013)
- Intern. Conf. on Machine Learning (ICML) (2009 – 2013)
- Neural Information Processing Systems (NIPS) (2009 – 2012)
- Intern. Conf. on Automated Planning and Sched. (ICAPS) (2008 – 2013)
- Uncertainty in Artificial Intelligence (UAI) (2010 – 2013)
- European Conference on Artificial Intelligence (ECAI) (2010 – 2013)
- Asian Conference on Machine Learning (ACML) (2011 – 2013)
- Conf. on Information and Knowledge Management (CIKM) (2012 – 2013)
- European Conference on Machine Learning (ECML) (2012 – 2013)

Conference Reviewing

- European Conference on Information Retrieval (ECIR) (2010)
- Constraint Programming (CP) (2013)

External Grant Funding

- **Co-PI, Australia-China Science and Research Fund (2013)**

  Title: *Machine Learning for Social Media*
  Budget: USD $45,000 for collaboration with Tsinghua University, Beijing

- **PI, Google Research Award (2011)**

  Title: *Preference Elicitation for Social Recommendation*
  Budget: USD $76,000 for research engineer & travel

Event Organization

- **Dagstuhl 2014 Workshop on Preference Learning; Wadern, Germany**
- **AAAI 2013 Student Abstracts Program; Bellevue, WA, USA**
- **ICAPS 2012 Workshop on the International Planning Competition; Atibaia, Brazil**
- **NIPS 2011 Workshop on Choice Models and Preference Learning; Sierra Nevada, Spain**

  Budget: Support for video recording from PASCAL2

- **9th European Workshop on Reinforcement Learning (EWRL9-2011); Athens, Greece**

  Budget: AUD $23,000; AI Journal, PASCAL2, ANU, and NICTA funded

- **ICAPS 2011 International Probabilistic Planning Competition (IPPC)**

Budget: USD $1,000; Amazon EC2 Grant
Designed language: Relational Dynamic Influence Diagram Language (RDDL)

- **Machine Learning Summer School (MLSS-10); Canberra, Australia**
  Budget: AUD $59,000; PASCAL2, ANU, and NICTA funded
- **ICAPS 2010 Workshop on Planning and Scheduling under Uncertainty; Toronto, Canada**
- **ICAPS 2010 Doctoral Consortium; Toronto, Canada**
  Budget: USD $30,000; NSF, AI Journal, and NICTA funded

International Tutorials

- **Assoc. for the Adv. of Artificial Intelligence (AAAI-13) July 14, 2013**
  Title: *Symbolic Methods for Probabilistic Inference, Optimization, and Decision-making*
- Invited Tutorial, **Brazilian AI Conference (SBIA-12) Oct 21, 2012**
  Title: *Discrete and Continuous Planning Domain Modeling in RDDL*
- Invited Tutorial, **ICAPS-12 Planning Summer School June 25, 2012**
  Title: *Recent Advances in Continuous Planning*
- **International Conference on Automated Planning and Scheduling**
  (ICAPS-12) June 26, 2012
  (ICAPS-11) June 13, 2011
  Title: *Introduction to Planning Domain Modeling in RDDL*
- **International Conference on Automated Planning and Scheduling**
  (ICAPS-12) June 26, 2012
  (ICAPS-11) June 12, 2011
  Title: *Decision Diagrams in Automated Planning and Scheduling*
- **Machine Learning Summer School (MLSS-10) Sep. 27, 2010**
  Title: *Graphical Models*
- **International Conference on Automated Planning and Scheduling**
  (ICAPS-10) May 13, 2010
  Title: *Planning and Scheduling for Traffic Control*
- **Machine Learning Summer School (MLSS-09) Jan. 27, 2009**
  Title: *Reinforcement Learning*
- **International Conference on Automated Planning and Scheduling**
  (ICAPS-08) Sep. 15, 2008
  Title: *First-order Planning Techniques*

International Talks

- AI Seminar, **U.C. Irvine** **Nov 30, 2012**
  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*
- Automated Reasoning Group Seminar, **U.C.L.A.** **Nov 29, 2012**
  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*
- Invited Talk, **Brazilian AI Conference (SBIA)** **Oct 21, 2012**
  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- AI Group Seminar, **University of Waterloo** **Jun 20, 2012**

  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- KR Seminar, **University of Toronto** **May 23, 2012**

  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- CSAIL Talk, **M.I.T.** **May 17, 2012**

  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- CS Department Seminar, **University of Mass., Amherst** **May 16, 2012**

  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- AI Seminar, **Cornell University** **May 15, 2012**

  Title: *New Objective Functions for Social Collaborative Filtering*

- URCS Department Seminar Series, **University of Rochester** **May 14, 2012**

  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- SELECT Lab Talk, **Carnegie Mellon University** **May 1, 2012**

  Title: *Data Structures for Efficient Inference and Optimization in Expressive Continuous Domains*

- Google Tech Talk, **Google Sydney** **Mar 30, 2012**

  Title: *New Objective Functions for Social Collaborative Filtering*

- ML Seminar, **University of Edinburgh** **Oct 26, 2011**

  Title: *Exact Inference in Discrete and Continuous Variable Graphical Models*

- Invited Talk, **University College London (UCL)** **Oct 24, 2011**

  Title: *Symbolic Dynamic Programming for Discrete and Continuous MDPs*

- Research Presentation, **Google Zürich** **May 18, 2010**

  Title: *Probabilistic Latent Maximal Marginal Relevance*

- Invited Speaker, **Statistical Relational Learning (SRL-09)** **Jul. 2, 2009**

  Title: *Exploiting Relational Models in Sequential Decision-making*

- Invited Presentation, **N.U.S./M.I.T. POMDP Workshop** **Jan. 21, 2009**

  Title: *First-order Partially Observable MDPs*

- Research Seminar, **Microsoft Research, Redmond** **Dec. 3, 2008**

  Title: *Real-time Bayesian Search Control for MDPs*

- AI Seminar, **U.C. Berkeley** **Dec. 2, 2008**

  Title: *Affine Algebraic Decision Diagrams (AADDs)*

- AI Seminar, **University of Waterloo** **Sep. 20, 2007**

  Title: *Approximate Solution Techniques for Factored FOMDPs*

- Learning in Intelligent Systems Seminar, **M.I.T.** **May 24, 2007**

  Title: *Approximate Solution Techniques for Factored FOMDPs*

- Reinforcement Learning/AI Seminar, **University of Alberta** **Jul. 4, 2006**

  Title: *Relational Reinforcement Learning and Feature Discovery*

- Description Logic Seminar, **University of Manchester** **Jun. 6, 2006**

  Title: *An Ordered Theory Resolution Calculus for Hybrid Reasoning in First-order Extensions of Description Logic*

- Learning and Adaptation Seminar, **Stanford University** **Jan. 18, 2001**

  Title: *Efficient and Cognitively Plausible Learning in Backgammon*

Awards

- ANU RSCS Department 2012, **Top-rated Course in SELS Student Evaluations – Document Analysis, Semester 2**
- ANU Research and Research-training Awards 2012, **Top Supervisor Award**
- AAAI 2012, **Outstanding Program Committee Member Award**
- ANU College of Engineering and Computer Science 2010, **College Award for Teaching – Supervision**
- ICAPS 2006 International Probabilistic Planning Competition, **2nd place**
- Armed Forces Communications Electronics Association (AFCEA Washington Chapter) **Undergraduate Scholarship Recipient**
- Carnegie Mellon University Presidential **Undergraduate Scholarship Recipient**
- Tau Beta Pi **Engineering Honor Society**

Students Supervised

PhD Students

- Robby Goetschalckx, *Reinforcement Learning with Domain Knowledge*
  (K.U. Leuven, Belgium, graduated 2009; visiting student)
- Karina Valdivia Delgado, *Factored MDPs with Transition Uncertainty*
  (Univ. of Sao Paulo, Brazil, graduated 2010; visiting student)
  Recipient of **Best Brazilian PhD Dissertation on AI, 2008 – 2010**
- Shengbo Guo, *Bayesian Recommender Systems: Models and Algorithms*
  (ANU, graduated 2011; primary supervisor)
- Matthew Robards, *Kernelized Reinforcement Learning*
  (ANU, graduated 2012; co-supervised)
- Zahra Zamani, *Sequential Decision-making in Continuous Domains*
  (ANU, graduates 2013; primary supervisor)
- M. Ehsan Abbasnejad, *Bayesian Decision-theoretic Machine Learning*
  (ANU, graduates 2014+; primary supervisor)
- Suvash Sedhain, *Large-scale Social Collaborative Filtering*
  (ANU, graduates 2015+; primary supervisor)
- Shamin Kinathil, *Multiagent Sequential Decision-making*
  (ANU, graduates 2016+; primary supervisor)

Masters Students

- Neil Bacon, *Continuous MDPs*
  (ANU, graduated 2008)
- Yue Sun, *Visual Search Interfaces*
  (ANU, graduated 2008)
- Martins Zalcamis, *Multiagent Reinforcement Learning*
  (T.U. Vienna, graduated 2009)
- Lachlan Henderson, *Text Classification*
  (ANU, graduated 2009)
- Loïs Vanhee, *Multiagent Coalitional Planning*
  (University of Rennes, France, graduated 2010)
- Oulin Yang, *Automated Time and Event Extraction*
  (ANU, graduated 2011)

- Paul Rivera, *Bayesian Hierarchical Reinforcement Learning*
  (ANU, graduated 2011)
- Mostafa Moghadam, *Kernel Bandits*
  (ANU, graduated 2011)
- Mahmoud Elborawi, *Query Expansion*
  (ANU, graduated 2011)
- Joseph Noel, *Social Collaborative Filtering (2010)*
  Social Collaborative Filtering (2011)
  (ANU, graduated 2011)
- Hendra Gunadi, *Nearest Neighbor Methods for High-dimensional Data*
  (ANU, graduated 2011)
- John You, *Bayesian Monte Carlo Tree Search*
  (ANU, graduated 2012)
- Jiecheng Zhao, *Distance Metric Learning*
  (ANU, graduates 2013)
- Rishabh Mehrotra, *Topic Modeling for Microblogs*
  (BITS Pilani, India, graduates 2013)
- Alina Petrova, *Social Media Recommendation*
  (T.U. Dresden, Germany, graduates 2013)
- Xianghui Kong, *Decision-theoretic Planning via Boolean Satisfiability*
  (Peking University, graduates 2013)
- Gary Ge, *Natural Language Understanding of Spatial Descriptions*
  (ANU, graduates 2013)
- Mona Golestan Far, *Patent Citation Segmentation*
  (ANU, graduates 2013)
- Yong Boon Lim, *ZDD-based Nearest Neighbor Search*
  (ANU, graduates 2013)
- Luis Gustavo Rocha Vianna, *Efficient Approximation in Decision Diagrams*
  (University of Sao Paulo, Brazil, graduates 2013)

Undergraduate Students

- Alex Davies, *Lifted Inference in Markov Logic Networks*
  (ANU, graduated 2009)
- Ian Kilpatrick, *Reinforcement Learning with CRFs*
  (Univ. Melbourne, graduated 2010)
- Sarah Bull, *Parody Identification in Text*
  (ANU, graduated 2010)
- Sotirios Diamand, *Factored UCT for MDPs*
  (ANU, graduated 2010)
- Alex O'Neill, *Sentiment Analysis*
  (ANU, graduated 2010)
- Aaron Defazio, *Triple-based Query Answering*
  (ANU, graduated 2010)
- Daniel Visentin, *Auto-relevance Kernel Reinforcement Learning*
  (ANU, graduated 2011)
- Cheng (Simon) Fang, *Factored Real-time Dynamic Programming*
  (University of Sydney, graduated 2011)
- Carlton Downey, *Temporal Difference Bayesian Model Averaging*
  (Victoria University of Wellington, New Zealand, graduated 2011)
- Arun Neelicattu, *Fraud Detection in Financial Time Series*
  (ANU, graduated 2011)
- Kar Wai Lim, *Diversity in Information Retrieval*
  (ANU, graduated 2011)
- Kin-Hon Chan, *Concurrent Factored Planning*
  (ANU, graduated 2012)
- Aaron Li, *GPU-based Algorithms for Topic Modeling*
  (ANU, graduated 2012)
- Riley Kidd, *Affinity-based Social Collaborative Filtering*

(ANU, graduated 2012)
- Tan Nguyen, *Learning with Piecewise Convex Losses*
(ANU, graduated 2012)
- Alan Lee, *Efficient XADD Approximation*
(U. of Auckland, New Zealand, graduates 2013)
- Rodrigo Santa Cruz, *Feature Engineering via Automatic Program Optimization*
(U. of Pernambuco, Brazil, graduates 2014)

SOFTWARE DEVELOPMENT

- **RDDL (NICTA)** Language design and grammar specification, parser and simulator implementation for new planning description language RDDL for the 2011 International Proabilistic Planning Competition and the forthcoming 2014 competition. The objective of RDDL is to scalably model realistic (concurrent) planning and scheduling problems with resources. The language is currently supported by 11 planners (5 open source), contributed from academic institutions around the world (US, Canada, Germany, South Korea, Singapore).
- **OpinionWatch (NICTA)** Lead architect supervising multiple software engineers over three years for automated online capture of full text content sourced from RSS feeds, search engine and database design, algorithms for topic and opinion summarization, and multi-perspective visualization of search results. Licensed to multiple external organizations including DSTO.
- **EventWatch (NICTA)** Co-lead architect supervising two software engineers on a real-time tweet crawler, analysis, and visualization tool for Twitter streams. Licensed to one external organization for trial evaluation.

EXTRACURRICULAR

- **Capoeira** (Afro-Brazilian Martial Art) and **Taekwondo** (Korean Martial Art).

References Available Upon Request