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Research Projects / Systems Developed

2000-	**Adaptive Control of NASA Life Support Systems**
2000	**Internet Auction Trading Strategies**
1999-	**Optimal Route Planning Under Time-Dependent Uncertainty**
1996-	**Learning Evaluation Functions for Global Optimization**
1994-	**Scaling Up Reinforcement Learning** / **Value Function Approximation**
1996	**Information Retrieval** / **Web Indexing** / **Machine Learning**
1995-96	**Anonymizing Proxy System for the World Wide Web**
1993-94	**Reinforcement Learning for Network Routing** / **Multi-Agent Learning**
1992-93	**Artificial Neural Network algorithms**
1992-94	**Self-Learning Backgammon Software**
1986-95	**Sole proprietor, BOYAN Communications**

Chronology

- **NASA Ames Research Center**, Research Scientist, September 1998-present.
  - Visiting Scientist, **MIT AI Lab**, January 2000-present.
  - Group affiliation at Ames: Autonomy and Robotics Area, Computational Sciences Division
- **Carnegie Mellon University**, **Ph.D., Computer Science**, August 1998; **M.S.**, May 1995.
- **University of Cambridge**, **M.Phil.**, Computer Speech and Language Processing, August 1992.
- **University of Chicago**, **B.S.** with General Honors, Mathematics, June 1991.

Professional Activities / Teaching

2000-2003	Editorial Board, *Machine Learning Journal*
1995	Teaching Assistant, *How to Think (Like a Computer Scientist)*
1993	Teaching Assistant, *Artificial Neural Networks* (graduate course)
1992-1997	Organizer, CMU Reinforcement Learning Group
1986-93	Mathematics teacher, Johns Hopkins University *Center for Talented Youth* residential summer program

Selected Refereed Publications

[1] Boyan, J. A. and M. Mitzenmacher. "Improved Results for Route Planning in Stochastic Transportation Networks." Accepted to the *12th Annual Symposium on Discrete Algorithms* (SODA), 2001.

[2] Boyan, J. A. and M. L. Littman. "Exact Solutions to Time-Dependent MDPs." To appear in *Advances in Neural Information Processing Systems* (NIPS). MIT Press, 2001.

[3] Boyan, J. A. and A. W. Moore. "Learning Evaluation Functions to Improve Local Search." *Journal of Machine Learning Research*, to appear, 2000.

[4] Boyan, J. A. "Technical Update: Least-Squares Temporal Difference Learning." *Machine Learning* Journal, to appear, 2000.

[5] Boyan, J. A. "Least-Squares Temporal Difference Learning." In Bratko, I., and Dzeroski, S., eds., *Machine Learning: Proceedings of the Sixteenth International Conference* (ICML), 1999.

[6] Boyan, J. A. and A. W. Moore. "Learning Evaluation Functions for Global Optimization and Boolean Satisfiability." *Fifteenth National Conference on Artificial Intelligence* (AAAI), 1998.

[7] Schneider, J. G., J. A. Boyan and A. W. Moore. "Value Function Based Production Scheduling." *Machine Learning: Proceedings of the Fifteenth International Conference* (ICML), 1998.

[8] Moore, A. W., J. G. Schneider, J. A. Boyan and M. S. Lee. "Q2: Memory-Based Active Learning for Optimizing Noisy Continuous Functions." *Machine Learning: Proceedings of the Fifteenth International Conference* (ICML), 1998.

[9] Boyan, J. A. "The Anonymizer: Protecting User Privacy on the Web." *Computer-Mediated Communication Magazine*, 4 (9), September 1997.

[10] Boyan, J. A. and A. W. Moore. "Using Prediction to Improve Combinatorial Optimization Search." *Sixth International Workshop on Artificial Intelligence and Statistics* (AISTATS), 1997.

[11] Boyan, J. A. and A. W. Moore. "Learning Evaluation Functions for Large Acyclic Domains." In L. Saitta (ed.), *Machine Learning: Proceedings of the Thirteenth International Conference* (ICML). Morgan Kaufmann, 1996.

[12] Boyan, J. A., and A. W. Moore, "Generalization in Reinforcement Learning: Safely Approximating the Value Function." In Tesauro, G., D. S. Touretzky, and T. K. Leen (eds.), *Advances in Neural Information Processing Systems 7* (NIPS). MIT Press, 1995.

[13] Boyan, J. A., and M. L. Littman, "Packet routing in dynamically changing networks: A reinforcement learning approach." In Cowan, J. D., Tesauro, G., and Alspector, J. (eds.), *Advances in Neural Information Processing Systems 6* (NIPS). Morgan Kaufmann, 1994.

Selected Unrefereed Publications

[14] Boyan, J. A. and W. L. Buntine, eds. "Statistical Machine Learning for Large-Scale Optimization." *Neural Computing Surveys* 3, 2000.

[15] Boyan, J. A. "Learning Evaluation Functions for Global Optimization." Ph.D. thesis, Carnegie Mellon University, August 1998.

[16] Boyan, J. A., A. W. Moore, and R. S. Sutton, Editors. "Proceedings of the Workshop on Value Function Approximation, Machine Learning Conference 1995." Carnegie Mellon Technical Report CMU-CS-95-206.