

Ricardo Silva

CONTACT INFORMATION

Gatsby Computational Neuroscience Unit
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RESEARCH INTERESTS

graphical models, causal inference, reasoning under uncertainty, Bayesian statistics, artificial intelligence in general

EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Ph.D., Machine Learning Department, August 2005

- Dissertation Topic: “Automatic Discovery of Latent Variable Models”
- Committee: Richard Scheines, Clark Glymour, Tom Mitchell, Greg Cooper

M.Sc., Knowledge Discovery and Data Mining, May 2002

Universidade Federal de Pernambuco, Brazil

M.Sc., Computer Science, January 2000

Universidade Federal do Ceará, Brazil

B.Sc., Computer Science, December 1997

HONORS AND AWARDS

Siebel Scholar, 2005

Microsoft Fellowship for M.Sc. research in knowledge discovery and data mining, 2000

CNPq scholarship for graduate (M.Sc.) research, Brazil, 1998-2000

Best work of undergraduate research in Mathematics/Computer Science/Statistics. Universidade Federal do Ceará, Brazil, 1997

Best work of undergraduate research in Mathematics/Computer Science/Statistics. Universidade Federal do Ceará, Brazil, 1996

CAPES (Programa Especial de Treinamento/Special Training Program) scholarship for undergraduate research, Brazil, 1995-1997

full tuition support for high school for being best student in class during all terms from 1987 to 1990. Colégio 7 de Setembro, Fortaleza-CE, Brazil, 1991-1993

ACADEMIC EXPERIENCE

Gatsby Computational Neuroscience Unit, London, UK

Postdoctoral research fellow

2005-

Research on graphical models and Bayesian inference. Participating on journal clubs and presenting series of talks on relevant research topics of interest.

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Teaching assistant

2003, 2004

Duties at various times have included office hours and recitation sessions (Machine Learning M.Sc. course with Roni Rosenfeld, and Statistical Approaches for Learning and Discovery Ph.D. course, with John Lafferty, Larry Wasserman and Teddy Seidenfeld).

Universidade Federal do Ceará, Fortaleza, Brazil

Teaching faculty

Feb.-July 2000

Taught programming fundamentals and programming languages.

PUBLICATIONS

Silva, R.(2007). "Causality". Encyclopedia of Machine Learning, Claude Sammut, ed. Springer.

Silva, R.; Heller, K. and Ghahramani, Z. (2007). "Analogical reasoning with relational Bayesian sets". AISTATS 2007.

Silva, R. (2006). "Principled selection of impure measures for consistent learning of linear latent variable models". NIPS Workshop on Causality and Feature Selection.

Silva, R. and Scheines, R. (2006). "Towards association rules with hidden variables". Proceedings of the 10th European Conference on Principles and Practice of Knowledge Discovery in Databases, PKDD '06

Silva, R. and Ghahramani, Z. (2006). "Bayesian inference for Gaussian mixed graph models". Proceedings of the 22nd Conference on Uncertainty on Artificial Intelligence, UAI '06

Silva, R. and Scheines, R. (2006). "Bayesian learning of measurement and structural models". Proceedings of the International Conference on Machine Learning, ICML '06

Silva, R.; Scheines, R.; Glymour, C and Spirtes, P. (2006). "Learning the structure of linear latent variable models". Journal of Machine Learning Research 7, 191-246.

Silva, R. and Scheines, R. (2005). "New d-separation identification results for learning continuous latent variable models". Proceedings of the International Conference in Machine Learning, ICML '05

Silva, R.; Zhang, J. and Shanahan, J. G. (2005). "Probabilistic workflow mining". Proceedings of Knowledge Discovery and Data Mining, KDD '05

Silva, R.; Scheines, R.; Glymour, C. and Spirtes P. (2003) "Learning measurement models for unobserved variables". Proceedings of the 19th Conference on Uncertainty on Artificial Intelligence, UAI '03

Moody, J.; Silva, R.; Vanderwaart, J; Ramsey, J.. and Glymour, C. (2002). "Classification and filtering of spectra: a case study in mineralog". Intelligent Data Analysis 6, 517-530

Moody, J.; Silva, R.; Vanderwaart, J. and Glymour, C. (2001). "Data filtering for automatic classification of rocks from reflectance spectra". Proceedings of the 7th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, KDD '01

Silva, R. B. A. and Ludermir, T. B. (2001). "Hybrid systems of local basis functions". Intelligent Data Analysis 5, 227-244

Silva, R. B. A. and Ludermir, T. B. (2000). "Obtaining simplified rules by hybrid learning". Proceedings of the 17th International Conference on Machine Learning, ICML '00

Silva, R. B.A and Ludermir, T. B. (1999). "Neural network methods for rule induction". Proceedings of the 1999 International Joint Conference on Neural Networks, Washington, DC

RECENT
MANUSCRIPTS

Silva, R.; Airoidi, A. and Heller, K. (2007). "Small sets of interacting proteins suggest latent linkage mechanisms through analogical reasoning." Gatsby Computational Neuroscience Unit, Technical Report GCNU TR 2007-001. <http://www.gatsby.ucl.ac.uk/~rbas>

Silva, R. and Ghahramani, Z. (2006). "Bayesian inference for discrete mixed graph models: normit networks, observable independencies and infinite mixtures". <http://www.gatsby.ucl.ac.uk/~rbas>

PATENTS

Silva, R.; Zhang, J. and Shanahan, J. G. "Probabilistic Workflow Mining". Patent pending, Application #11/506,844.

INVITED TALKS

"Causality". Advanced Tutorial Lecture Series on Machine Learning. Department of Engineering, University of Cambridge, November 2006.

"Model Search in Structural Equation Models with Latent Variables". 25th Biennial Conference of the Society for Multivariate Analysis in the Behavioral Sciences (SMABS). Budapest, Hungary, July 2006.

"Tutorial on Graphical Models for Probabilistic and Causal Modeling". ACM Fourteenth Conference on Information and Knowledge Management (CIKM), Bremen, Germany, October 2005.

"Latent Variables and Graphical Causal Models." Department of Statistics, University of Pittsburgh. Pittsburgh, PA, May 2005.

"Automatic Discovery of Latent Variable Models". Gatsby Computational Neuroscience Unit. London, UK, February 2005.

PROFESSIONAL
EXPERIENCE AND
OTHER ACTIVITIES

Publication Chair, International Conference on Machine Learning (ICML), 2007

Reviewer for the Machine Learning Journal, Cognitive Science Journal, Uncertainty in Artificial Intelligence Conference (UAI 2006, 2007), Neural Information Processing Systems (NIPS 2007), and Journal of Artificial Intelligence Research.

Gatsby Machine Learning Journal Club, main organizer

Carnegie Mellon University, Machine Learning Department, Pittsburgh, Pennsylvania USA
Summer researcher **2001-2003, 2005**

Developed and implemented algorithms for processing and classification of spectrometer data. Designed, implemented and evaluated algorithms for structural equation models with latent variables.

Clairvoyance Corporation, Pittsburgh, Pennsylvania USA

Summer researcher **2004**
Presented literature reviews on graphical models and text mining. Developed new algorithms and software on graphical models for workflow applications. Co-authored patent application.

REFERENCES

Zoubin Ghahramani (postdoc advisor)
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University of Cambridge
Trumpington Street
Cambridge CB2 1PZ, UK
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Richard Scheines (PhD advisor)
Department of Philosophy and Machine Learning Department, 135 Baker Hall
Carnegie Mellon University
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Clark Glymour
Department of Philosophy, 135L Baker Hall
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Gregory Cooper
Department of Biomedical Informatics
University of Pittsburgh
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