Gustavo Lacerda

CONTACT INFORMATION

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EDUCATION

2008 – 2010: ***MSc in Computer Science, University of British Columbia*** Graduate coursework in Computer Science and Statistics. Thesis topic: stochastic block models for ranked relational data.
June 2009: Complex Systems Summer School (Santa Fe Institute)
July 2007: IPAM Graduate Summer School on Bayesian methods in Cognitive Science (UCLA)
2003 – 2005: ***MSc in Logic, Universiteit van Amsterdam*** Mostly Artificial Intelligence, Logic and Cognitive Science.
1997 – 2001: ***B.S. in Mathematics and Computer Science, Bucknell University*** Mostly Computer Science and pure and applied Mathematics and Statistics. Also classes in Physics, Psychology and Linguistics.

PUBLICATIONS

- **Gustavo Lacerda**, Peter Spirtes, Joseph Ramsey, Patrik Hoyer – Discovering Cyclic Causal Models by Independent Components Analysis. *In Proceedings of the 24th Conference on Uncertainty in Artificial Intelligence (UAI-2008). (plenary talk)*
- Patrik Hoyer, Aapo Hyvärinen, Richard Scheines, Peter Spirtes, Joseph Ramsey, **Gustavo Lacerda**, Shohei Shimizu – Causal discovery of linear acyclic models with arbitrary distributions. *In Proceedings of the 24th Conference on Uncertainty in Artificial Intelligence (UAI-2008), in press.*
- Noboru Matsuda, William W. Cohen, Jonathan Sewall, **Gustavo Lacerda**, and Kenneth R. Koedinger – Why Tutored Problem Solving may be better than Example Study: Theoretical Implications from a Simulated-Student Study. *In Proceedings of the International Conference on Intelligent Tutoring Systems 2008*
- Noboru Matsuda, William W. Cohen, Jonathan Sewall, **Gustavo Lacerda**, and Kenneth R. Koedinger – Evaluating a Simulated Student using Real Students Data for Training and Testing, *In Artificial Intelligence in Education 2007*
- Noboru Matsuda, William W. Cohen, Jonathan Sewall, **Gustavo Lacerda**, and Kenneth R. Koedinger – Predicting Students' Performance with SimStudent: Learning Cognitive Skills from Observation. *In International Conference on User Modeling 2007.*
- S. Fissaha Adafre, W.R. van Hage, J. Kamps, **G. Lacerda de Melo**, and M. de Rijke – The University of Amsterdam at CLEF 2004, *In C. Peters and F. Borri, editors, Working Notes for the CLEF 2004 Workshop, pages 91-98, 2004.*

PROFESSIONAL DUTIES

- **Reviewer:** Cognitive Science 2008, 2009; International Conference on Computers in Education 2007; Human Brain Mapping 2010

- **Conference organization:** NIPS 2009 (student volunteer), Artificial Intelligence in Education 2005, Amsterdam (student volunteer)

Employment History

- **Sep 2008 – : University of British Columbia (Vancouver, British Columbia) – Teaching Assistant** Models of Computation, Introduction to Artificial Intelligence, Introduction to Relational Databases.
- **Aug 2006 – July 2008: Carnegie Mellon University (Pittsburgh, Pennsylvania)**
  - **AI Programmer for the SimStudent Project (60% time)** Developing and maintaining a system that learns production rule models of expert or novice skills from behavior data (Programming by demonstration based on Inductive Logic Programming), designing and implementing search algorithms; modeling problem-solving domains such as stoichiometry.
  - **Independent Researcher in Machine Learning (40% time)** – *Project 1:* Discovering causal graphical models from observational data, extending Shimizu et al's ICA-based method (with Peter Spirtes). *Project 2:* Developing a hypothesis test about the mutual information between different views in coupled Markov Chains (with Cosma Shalizi).
- **Jan 2006 – May 2006: Lisp Programming Internship at Cadence Design Systems (Munich, Germany)** Worked in the custom development team: developing, debugging, testing and re-releasing packages.
- **2004 – 2005: Private Tutor at International School of Amsterdam (Amsterdam, Netherlands)** – Tutored Mathematics and Physics to students aged 13 to 17, including a student in honors (IB higher-level) physics. In total, about 35 lessons to 7 students.
- **Sep 2001 – Jul 2002: Software Engineer at Amazon Technologies (Woburn, Massachusetts)** – General Technical Position: web programming with JSP / JBuilder: front-end and back-end; Java programming: programming data conversion, automatic report generation; General support: Windows network support, permissions, mail server administration, webmastering, system updates.
- **Summer 2000: Research Intern at Bell Labs, Lucent Technologies (Murray Hill, New Jersey)** – Research intern at the Mathematics of Communications department. Implemented variations of the Viterbi algorithm to decode linear error-correcting codes over simulated noisy channels.

Selected Programming Projects

(see also Employment and Publications)

- 2009: inference in stochastic block models for ranked relational data, in R
- 2009: resampling and model selection to make ICA achieve its identifiability limit
- 2009: implemented Dobra et al's "Mode-Oriented Stochastic Search" in Matlab, for a new class of Bayesian sparse linear regression with spike&slab priors.
- 2008: sampling of the mutual information statistic for coupled Markov Chains, in Matlab

- 2008: invented and implemented LiNG-D (see UAI 2008)
- 2007: implemented Turney & Littman's "Latent Relational Analysis" in Java, for measuring semantic similarity between word-pairs, for answering SAT analogy questions.
- 2005: designed and implemented an Equational Reasoner, in Common Lisp: makes derivations by using tactics such as "solve" and "substitute".
- 2004: Bilingual dictionary builder, in Perl: builds a dictionary by matching words from a sentence-aligned parallel corpus, using position, cognate-matching and word-length correlations.
- 2000: Simulation of error-correcting codes in noisy channels in C++.
- 2000: Family-tree software in VisualBasic + MSAccess + SQL: supported data entry, several views, and a relatedness search.
- 1993: Reverse-engineered the game Minesweeper in MS QuickBasic.

Programming Experience

Languages: R, Matlab, Java, Lisp (mostly CL), Perl, VisualBasic, C/C++, Prolog
IDEs: Eclipse, Emacs, MS VisualStudio, JBuilder, DreamWeaver, various debuggers
Databases: SQL, MS Access, MS SQL Server
Web programming: MediaWiki, HTML, XML, PHP, ASP, JSP, JavaScript
Other: Git, CVS, SubVersion, Shell Scripting (bash, VBScript), JProfiler, OWL/Protege, Marathon, Coq
Operating Systems: experience with Linux, Solaris, Windows

Languages

- English: native-level
- Portuguese: native-level
- Dutch: fluent
- French: semi-fluent
- German: good understanding
- Spanish: good understanding