

CURRICULUM VITAE

Claudio Gutierrez

1. General Info

Personal Address: Blanco Encalada 2120, 3er piso, Santiago, Chile.

Phone: 56-2-978-0658. Email: cgu-tierr@dcc.uchile.cl.

Education (1999) Ph.D. Computer Science. Wesleyan University.

(1993) Magister en Ciencias Exactas, P. Universidad Católica de Chile.

(1981) Licenciado en Matemáticas, Universidad de Chile.

Current Position (2004 - present) Associate Professor, Department of Computer Science, Universidad de Chile.

2. Projects, Administration

Research Projects .

Center for Semantic Web Research, Millenium Nucleus, Mideplan (NC120004), Senior Researcher (2014-)

Web Data Models for Linked Data, Project Fondecyt 1110287. Main Researcher (2011-2013).

SPARQL for RDF data with RDFS vocabulary and blank nodes: Semantics, Complexity and Implementation, Project Fondecyt 1090565, Co-researcher, (2009-2001).

RDF Databases, Project Fondecyt 1070348, Main Researcher, (2007 - 2009).

Semantic Processing and Analysis of Web Services, Project Fondecyt 105062, Co-researcher, (2005 - 2008).

XML y Gobierno Electrónico, Chile-Korea

Center, Project Leader, (2004 - 2006).

Center for Web Research, Núcleo Milenio, MI-DEPLAN , P01-029-F, Mideplan, Associated Researcher (2003 - 2007).

Metadatos para describir y consultar la Web oculta, Project Fondecyt 1030810, Main Researcher, (2003 - 2006).

Academic Service (Editorial, Chair, PCs) .

Member Editorial Board Journal of Web Semantics (2010 -)

Senior PC Member, International Semantic Web Conference, 2014

Co-Chair DESWeb: Data Engineering meets the Semantic Web, 2014

Co-Chair Data Track, Extended Semantic Web Conference, 2012

Co-Chair, *RR 2011 : The Fifth Int. Conf. on Web Reasoning and Rule Systems*, 2011.

Senior PC member Int. Conf. Semantic Web 2010, 2010.

Vice-Chair Int. Conf. Semantic Web 2009,

Co-Chair of VLDB Workshop *Semantic Web Databases*, Sept. 2007.

Program Committee Memberships: Knowledge Representation 2014, ACM Principles of Databases, PODS 2011, Int. Conference on Database Theory 2010, World Wide Web Conference (2009, 2013), Logic in Databases 2008, Int. Conference on Data Engineering 2007 (Industrial Track), Dublin Core Int. Metadata Conference (2005, 2006), FOIKS (2012, 2014), Latin American Theoretical Informatics Conference 2004, Latin American Web Conference (2003, 2005, 2006).

Professional Service Coordinator of National

Evaluation Committee for Graduate Scholarships, CONICYT, 2009, 2010. (Member since 2007).

Member ACM SIGMOD 2007 Undergraduate Scholarship Program Committee 2007.

Evaluator for National Science Foundation Projects in Chile (CONICYT), Argentina (CONICET), Uruguay (PEDECIBA), Switzerland (SNSF), The Netherlands (NWO).

Member of the Committee that designed the XML Chilean Norm for Electronic Documents, 2003-4.

5. Mauricio Monsalve, *A study of the structure and dynamics of the Chilean shareholding network*, Graduated 2009.

6. Alvaro Graves. *Búsquedas de Caminos en Red Wordnet*. Graduated 2007.

7. Juan Manuel Barrios, *Catalogación y Búsqueda Semántica en un Sitio Web*, Graduated 2006.

8. Jonathan Hayes, *A Graph Model for RDF*, Diploma Thesis, Technische Universität Darmstadt, 2004.

9. Daniel Hernández, *Estándares de Publicación para información pública en Chile*. In progress.

10. Chun Hau Lai, *Diseño e implementación de un algoritmo de clustering balanceado en PSO*. In Progress.

3. Training/Formation of Researchers and Students

Doctoral Thesis

1. Renzo Angles. *Graph Database Models and RDF*, Graduated 2009.
2. Mauro San Martin, *A Data Model for Social Network Analysis*, Graduated 2012.
3. Javier Fernández, *Binary RDF Optimization for Scalable Publishing, Exchanging and Consumption in the Web of Data*. Graduated 2014. (co-advised with M. Martinez-Prieto y Pablo de la Fuente). Graduated 2014.

Master Thesis

1. Daniel Hernández, *Estándares de Publicación de Dato para la Información Pública en Chile*, Graduated 2013.
2. Chun-Hau Lai, *Diseño e Implementación de Algoritmos Aproximados de Clustering Balanceado en PSO*. Graduated 2012.
3. Tomás Veloz, *A Computational Study of Algebraic Chemistry*. Graduated 2010.
4. Ernesto Krsulovic, *Plataforma de Integración de Recursos Educativos en la Web Chilena*. Graduated 2010.

Engineering Thesis

1. Felipe Espinoza, *Diseño y Desarrollo de una Herramienta de Representación y Visualización de Redes Sociales con Capacidades Distribuidas*. Graduated 2013.
2. Camilo Garrido. *Resúmenes Semiautomáticos de Conocimiento: Caso de RDF*. Graduated 2013.
3. Juan Muñoz, *Implementación de una Red Semántica de Archivos*. Graduated 2012.
4. Daniel Hernández, *Editor de Documentos XML Usando Plantillas y Transformaciones*. 2011.
5. Marcelo Sánchez, *Desarrollo de una Comunidad Web para Tecnicos de la Construcción y la Industria*, 2010.
6. Manuel Bahamondez, *Aplicación para la creación y administración de redes sociales*, 2009.
7. Mauricio Monsalve, *Métricas para la Interoperabilidad de la Información en el Gobierno Electrónico*, 2007.

8. Felipe Saavedra, *Búsqueda y Visualización de Imágenes en Memoria Chilena: un Enfoque Semántico*, 2007
9. Franco Cánepa, *Sistema para el Mercado, Catalogación y Búsqueda de Resúmenes de Memorias de Ingeniería Usando Tecnología de Metadatos*, 2005.
10. José Miguel Selman, *Modularización de los Aspectos de Seguridad en Web Services: Pautas e Implementación de Referencia*, 2005.
11. Cristian Fuenzalida, *Servicios Web para el Gobierno Electrónico en Chile: Pautas Técnicas de Requerimientos, Metadatos, Escenarios de Uso y Ventajas*, 2005.
12. Alvaro Gálvez, *Integración de Noticias en Formato RSS Utilizando un Filtro Bayesiano*, 2004.
13. Javier González, *Integración de Servicios Web Utilizando Mediadores*, 2004.
14. Ricardo Araos, *Buscador Semántico para Ontologías Locales de la Facultad*, 2004.
15. Fernando Picero, *Estudio Técnico de los Lenguajes de Programación en la F.C.F.M. de la Universidad de Chile*, 2003.
16. Marcela Calderón, *Mercado Semiautomático con Dublin Core*, 2003.
17. Cristián Vásquez, *Estudio Descriptivo y Técnico de Lenguajes y Sistemas de Metadatos Usados en la Web*, 2003.
18. Jorge Egger, *Desarrollo de la Maestría Acreditada Computacional Utilizando Recursos Restringidos*, 2003.
19. Ernesto Krsulovic, *Desarrollo de un Sistema de Anuario Utilizando Integración Semántica en la Web*, 2003.
20. Alvaro Herrera, *Caso de Desarrollo de Software Libre: Mejoramiento de Postgresql*, 2003.
21. Ulises Ortega, *Sistema de Información de Vigilancia de Trabajadores Expuestos en la Asociación Chilena de Seguridad*, 2002.

4. Publications

Books/Chapters

1. (Book Edit.) S. Rudolph, C. Gutierrez (Eds.) *Web Reasoning and Rule Systems*. Springer, LNCS 6902, 2011.
2. (Book Edit.) S. Tessaris, E. Franconi, Th. Eiter, C. Gutierrez, S. Handschuh, M-C. Rousset, R. A. Schmidt (Eds.) *Reasoning Web, Semantic Technologies for Information Systems*. Springer, LNCS 5689, 2009.
3. (Book Edit.) V. Christophides, M. Collard, C. Gutierrez: *Semantic Web, Ontologies and Databases*, VLDB Workshop, SWDB-ODBS 2007, Vienna 2007, Revised Selected Papers Springer 2008.
4. (Book Chapter) C. Gutierrez, *Modeling the Web of Data (Introductory Overview)*. Chapter of the Book: A. Polleres et al. (Eds.): *Reasoning Web 2011*, LNCS 6848, pp. 416-444, 2011.
5. (Book Chapter) M. Arenas, C. Gutierrez and J. Perez. *Foundations of RDF Databases*. Chapter of the Book: *Reasoning Web: Semantic technologies for information systems*, 5th International Summer School, S. Tessaris and E. Franconi (eds.), Springer 2009.
6. (Book Chapter) M. Arenas, C. Gutierrez, J. Perez, *On the Semantics of SPARQL*. Chapter of the Book *Semantic Web Information Management: a model based perspective*, R. De Virgilio, F. Giunchiglia, L. Tanca (Edit.), 2009. (Accepted 2009, to appear.)
7. (Book Chapter) C. Hurtado, C. Gutierrez, *Handling Structural Heterogeneity in OLAP*, Chapter II of the Book: *Data Warehouses and*

OLAP, R. Wrembel, Ch. Koncilia (Edits.), IRM Press, 2007, pp. 276-57.

life, Journal of Theoretical Biology 2010 Mar 7; 263(1):79-92.

Journals ISI

1. G. Pabón, C. Gutiérrez, J. D. Fernández, M. A. Martínez-Prieto, *Linked Open Data technologies for publication of census microdata*. JA-SIST 64(9): 1802-1814 (2013).
2. J. D. Fernández, M. A. Martínez-Prieto, C. Gutiérrez, A. Polleres, M. Arias, *Binary RDF representation for publication and exchange (HDT)*. J. Web Sem. 19: 22-41 (2013).
3. J. Alvarez, C. Gutierrez, *History of Computing in Chile, 1961-1982: Early Years, Consolidation, and Expansion*. IEEE Annals of the History of Computing 34(3): 22-33 (2012)
4. M. Arenas, C. Gutierrez, D. P. Miranker, J. Pérez, J. Sequeda, *Querying Semantic Data on the Web*, SIGMOD Record 41(4): 6-17 (2012)
5. C. Gutierrez, C. Hurtado, A. Mendelzon, J. Pérez, *Foundations of Semantic Web Databases*. Journal of Computer and System Sciences, 77(3): 520-541 (2011).
6. M. Arenas, C. Gutierrez, J. Perez, *Some Remarks on the Paper "semQA: SPARQL with Idempotent Disjunction"*. IEEE Trans. Knowl. Data Eng. 23(4): 638-639 (2011).
7. . Gutierrez, S. Jaramillo, J. Soto-Andrade, *Some thoughts on A. H. Louie's "More Than Life Itself: A reflection on formal systems and biology"*. Axiomathes 2011, Volume 21, Number 3, Pages 439-454.
8. J. Perez, M. Arenas, C. Gutierrez, *nSPARQL: A navigational language for RDF*, Journal of Web Semantics, 8(4): 255-270 (2010).
9. M. L. Cardenas, J. C. Letelier, C. Gutierrez, A. Cornish-Bowden, J. Soto-Andrade, *Closure to efficient causation, computability and artificial*
10. M. Arenas, J. Perez, C. Gutierrez, *Semantics and Complexity of SPARQL*, ACM Transactions on Databases, 34(3), Article 16 (45 pages), 2009.
11. S. Munoz-Venegas, J. Perez, C. Gutierrez, *The core fragment of RDFS: semantics, proof theory and complexity*. Journal of Web Semantics, 7(3): 220-234 (2009).
12. R. Angles, C. Gutierrez, *Survey of Graph Database Models*, ACM Computing Surveys, Vol. 40, No. 1, 2008.
13. C. Gutierrez, C. A. Hurtado, A. A. Vaisman: *Introducing Time into RDF*, IEEE Trans. Knowl. Data Eng. 19(2): 207-218 (2007)
14. C. Gutierrez, F. Gutierrez, M-C. Rivara: *Complexity of the bisection method*, Theor. Comput. Sci. 382(2): 131-138 (2007).
15. D. J. Dougherty, C. Gutierrez, *Normal forms for binary relations*, Theor. Comput. Sci. 360(1-3): 228-246 (2006)
16. C. Hurtado, C. Gutierrez, A. Mendelzon. *Capturing Summarizability with Integrity Constraints in OLAP*, ACM Transactions on Database Systems (TODS), Volume 30 , Issue 3 (September 2005), pages: 854 - 886.
17. (ISI: 7) V. Diekert, C. Gutierrez, C. Hagenah, *The existential theory of equations with rational constraints in free groups is PSPACE-complete*, Information and Computation, Volume 202, Issue 2 , 1 November 2005, Pages 105-140.
18. C. Hurtado, C. Gutiérrez, A. Mendelzon. *Capturing Summarizability with Integrity Constraints in OLAP*, Accepted in ACM Transactions on Database Systems, 2004.
19. C. Gutierrez, *Equations in free semigroups with involution and their relation to Equations*

in free groups, Theoretical Computer Science 297 (2003) 271- 280.

20. C. Gutiérrez, *Exponent of periodicity of word equations in fixed dimension is polynomial*, International Journal of Algebra and Computation, Vol. 12, No. 4 (2002), pp. 593-600, World Sc. Publ. Co.
21. C. Gutiérrez, *Normal Forms for Connectedness in Categories*, Annals of Pure and Applied Logic, 108 (1-3) (2001) pp. 237-247.
22. C. Gutiérrez, *On Free inverse semigroups*, Semigroup Forum, Vol. 61 (2000), pp. 154-158.
7. C. Gutierrez, C. Hurtado, A. Vaisman, *RDFS Update: From Theory to Practice*. ESWC (2) 2011: 93-107.
8. R. Angles, C. Gutierrez, *SQL Nested Queries in SPARQL*, International Workshop on Foundations of Databases Alberto Mendelzon, AMW, 2010.
9. J. Fernandez, C. Gutierrez, M. Martinez-Prieto, *RDF Compression: Basic Approaches*, WWW 2010 (Poster).
10. M. San Martin, C. Gutierrez, *Transforming Social Networks with RDF/SPARQL*, European Semantic Web Conference, 2009. LNCS 5554, Springer 2009, 293-307

Conferences

1. V. Fionda, C. Gutierrez, G. Pirro, *Knowledge Maps of Web Graphs*, Knowledge Representation, Vienna, 2014.
2. E. Franconi, C. Gutierrez, A. Mosca, G. Pirro, R. Rosati. *The Logic of Extensional RDFS*. International Semantic Web Conference (1) 2013: 101-116
3. V. Fionda, C. Gutierrez, G. Pirro, *Semantic Navigation on the Web of Data: Specification of Routes, Web Fragments and Actions*, World Wide Web Conference, WWW 2012.
4. M. San Martin, C. Gutierrez, P. T. Wood, *SNQL: A Social Networks Query and Transformation Language*. Alberto Mendelzon Workshop on Foundations of Databases, AMW 2011.
5. R. Angles, C. Gutierrez, *Subqueries in SPARQL*. Alberto Mendelzon Workshop on Foundations of Databases, AMW 2011.
6. J. D. Fernández, M. A. Martínez-Prieto, C. Gutierrez, *Publishing open statistical data: the Spanish census*. International Conference on Digital Government Research, DG.O 2011: 20-25.
11. R. Angles, C. Gutierrez, *The Expressive Power of SPARQL*, International Semantic Web Conference, 2008. LNCS 5021, Springer 2008, pp. 114-129.
12. J. Perez, M. Arenas, C. Gutierrez, *NSPARQL: A Navigational Language for RDF*, International Semantic Web Conference, 2008. LNCS 5021, Springer 2008, pp. 66-81.
13. C. Gutierrez, M. Marín: *An Overview of Web Research in Chile*. Proceeding LA-WEB 2008, pp. 135-143.
14. S. Muñoz, J. Perez, C. Gutierrez, *Minimal Deductive Systems for RDF*, Proceedings 4th European Semantic Web Conference, ESWC 2007, 2007, pp. 53-67. (Best Paper Award).
15. J. Perez, M. Arenas, C. Gutierrez, *The Semantics and Complexity of SPARQL*, Proc. 5th International Semantic Web Conference, ISWC 2006, 2006, pp. 30-43. (Best Paper Award).
16. A. Rodriguez, C. Gutierrez, *A Formal Approach to Qualitative Reasoning on Topological Properties of Networks*, Proc. EKAW 2006. Lect. Notes in Computer Science, Volume 4248/2006, pp. 358-365.

17. C. Gutierrez, C. Hurtado, A. Vaisman, *The meaning of erasing in RDF under the Katsuno-Mendelzon approach*. Workshop on Web Databases, WebDB-2006.
18. C. Gutierrez, C. Hurtado, A. Vaisman, Temporal RDF, Proc. 2nd. European Semantic Web Conference (ESWC2005), 2005, pp. 93-107. (Best Paper Award).
19. R. Angles, C. Gutiérrez: *Querying RDF Data from a Graph Database Perspective*. ESWC 2005. LNCS 3532, Springer 2005, pp. 346-360.
20. A. Graves, C. Gutierrez, *Data Representation for WordNet: A case for RDF*, Third Int. WordNet Conference, 2005.
21. J. Hayes, C. Gutierrez, *Bipartite Graphs as Intermediate Model for RDF*, International Semantic Web Conference (ISWC), Noviembre 2004. Lecture Notes in Computer Science, Springer-Verlag, Volume 3298 / 2004, pp. 47 - 61.
22. C. Gutierrez, C. Hurtado, A. O. Mendelzon, *Foundations of Semantic Web Databases*, Proc. ACM Symposium on Principles of Database Systems (PODS), June 2004, pp. 95 - 106.
23. C. Gutierrez, F. Gutierrez, M. C. Rivara, *A Geometric Approach to the Bisection Method*, Proc. VI Latin American Theoretical Informatics Symposium LATIN, 2004. Lecture Notes in Computer Science, Volume 2976/2004 Springer-Verlag, pp. 172-180.
24. C. A. Hurtado, C. Gutierrez, *Equivalence of OLAP Dimension Schemas*, Proc. Third International Symposium on Foundations of Information and Knowledge Systems FOIKS, 2004. Lecture Notes in Computer Science, Volume 2942/2004 Springer-Verlag, pp. 176 - 195.
25. C. A. Hurtado, C. Gutierrez, *Computing Cube View Dependences in OLAP Datacubes*, SSDBM 2003: 33-42.
26. C. Gutierrez, C. A. Hurtado, A. O. Mendelzon, *Formal aspects of querying RDF databases*, SWDB 2003: 293-307.
27. L. E. Bertossi, J. Chomicki, A. Cortés-Calabuig, C. Gutierrez, *Consistent Answers from Integrated Data Sources*, FQAS 2002: 71-85.
28. V. Diekert, C. Gutierrez, Ch. Hagenah, *The Existential Theory of Equations with Rational Constraints in Free Groups is PSPACE-Complete*, STACS 2001: 170-182.
29. C. Gutierrez, *Equations in Free Semigroups with Anti-involution and Their Relation to Equations in Free Groups*, LATIN 2000: 387-396
30. D J. Dougherty, C. Gutierrez, *Normal Forms and Reduction for Theories of Binary Relations*, RTA 2000: 95-109
31. C. Gutierrez, *Satisfiability of equations in free groups is in PSPACE*, STOC 2000: 21-27.
32. C. Gutierrez, *Satisfiability of Word Equations with Constants is in Exponential Space*, FOCS 1998: 112-119.
33. C. Gutierrez, *Solving Equations in Strings: On Makanin's Algorithm*, LATIN 1998: 358-373.
34. C. Gutierrez, *Decidability of the equational theory of Allegories*, RelMiCS 1998: 91-96.