

# Curriculum Vitae

PhD. Renzo Angles

January 30, 2018

## 1 Resume

**Place and date of birth:** Arequipa, Perú, May 24, 1979  
**Citizenship:** Peruvian  
**Languages:** Spanish (native), English (fluid)  
**Degree:** PhD. in Computer Science (Universidad de Chile)  
**Profession:** Systems Engineer (Univ. Católica Santa María, Perú)  
**Current Position:** Director and Assistant Professor (since April 2009)  
Department of Computer Science, Universidad de Talca  
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**Institutional e-mail:** rangles@utalca.cl  
**Web page:** <http://renzoangles.net>  
**LinkedIn:** <https://www.linkedin.com/in/renzo-angles/>  
**Creations:** <https://github.com/renzoar>

**Scientific interests** Foundations of Data Management  
Big Data Technologies  
Semantic Web

**Professional interests** Data Science and Big Data Projects  
Development of Web and Mobile applications  
Innovation and Entrepreneurship projects

**Research projects:** Principal Investigator (1), Co-investigator (4)

**R & D & i projects:** Director (2), Co-researcher (1)

**Scientific Publications:** Journal (6), Conference (17), Book chapters (1)

**Thesis Advisor:** Undergraduate (20)

**Abbreviations:** Universidad de Talca (Talca), Universidad de Chile (UCHile),  
Department of Computer Science (DCC), Continuous Education Program (PEC).

## 2 Research and Scientific Interests

- Foundations of Data Management: Graph Database Models, Graph Query Languages, Benchmarking of Graph Databases.
- Big Data: Graph Processing Frameworks, Protein Databases.
- Semantic Web: RDF, SPARQL, Ontology Engineering (OWL), Semantic Integration.
- Machine Translation: Web-based Refining of Machine Translations.

## 3 Professional Interests

- Data Science and Big Data projects
- Software Engineering: Web and Mobile applications.
- Innovation and Entrepreneurship projects.

## 4 University Studies and Academic Degrees

- *Ph.D. in Computer Science.* Department of Computer Science, Universidad de Chile. August 2003 – August 2009. Supervisor: Prof. Claudio Gutiérrez. Thesis title: “Graph Database Models and RDF”.
- *Systems Engineering.* Universidad Católica de Santa María, Arequipa, Perú. 2001.
- *Bachelor in Systems Engineering.* Universidad Católica de Santa María, Arequipa, Perú. 1996 – 2000.

## 5 Continuing education

- *Big Data Modeling and Management Systems.* Universidad de California en San Diego and Coursera. License JBVR4K7RJYP8, Oct. 2017.
- *Introduction to Big Data.* Universidad de California en San Diego and Coursera. License HUF8Q6TCY68R, Aug. 2017.

- *Data Science Orientation Course*. Microsoft Corporation and edX. Nov. 2016.
- *Entrepreneurship Academy*. Child Institute for Innovation and Entrepreneurship, University of California, Davis, USA. Sep. 16-18, 2014.

## 6 Experience

- *Director of the Department of Computer Science*. Universidad de Talca. Since April 2016.
- *Postdoctoral position*. Knowledge Representation & Reasoning Group, Department of Computer Science, VU University Amsterdam. January 2013 – January 2014.
- *Assistant Professor*. Department of Computer Science, Universidad de Talca. Since April 2010.
- *Instructor Professor*. Department of Computer Science, Universidad de Talca. April 2009 – March 2010.

## 7 Honor and Award

- Co-author of the Best Research Paper “The multiset semantics of SPARQL patterns” at International Semantic Web Conference 2016.

## 8 Projects

### 8.1 Research Projects

Participation as Principal Investigator:

- “*Comparison of Graph Databases and RDF Databases*”. Initiation into Research Project Nr. 11100364, Fondecyt, Chile. Oct. 2011 – Sept. 2013.

Participation as Co-Investigator:

- “*Center for Semantic Web Research*”. Funded by the Iniciativa Científica Milenio (Chile). 2014 – 2019.

- “*Linked Data Benchmark Council (LDBC)*”. Project Nr. 317548, European Community’s Seventh Framework Programme FP7. Jan. 2013 – Jan. 2014.
- “*Engineering metric space indices in secondary memory and applications*”. Rodrigo Paredes, head. Fondecyt Regular Project Nr. 1131044, Fondecyt, Chile. 2013 – 2015.
- “*Live Andes as a citizen science tool for Latin America*”. Latin American and Caribbean Collaborative ICT Research Virtual Institute (RFP2011).

Participation as Ph.D. Student:

- “*net2 exchange program (Dissemination and Exploitation Package)*”. Project funded by Marie Curie action ”International Research Staff Exchange Scheme (IRSES)”, FP7-PEOPLE-2009-IRSES, under grant number 24761.
- “*RDF Databases*”. Claudio Gutierrez, head. Research Project Nr 1070348, Fondecyt, Chile. March 2007 – 2008.
- “*Millenium Nucleus Center for Web Research*”. Mideplan (Chile) Project Nr P01-029-F. 2005 – 2007.
- “*Development of a basis for implementing e-Government Solutions in Chile*”. Chile-Korea IT Cooperation Center (ITCC), Chile. 2004 – 2006.

## 8.2 Research, Development and Innovation Projects (R&D&i)

- Co-researcher in “*Nuevo servicio biotecnológico para la industria alimentaria basado en el diseño y producción de enzimas*”. Funded by Fondo de Innovación para la competitividad, Región del Maule, Chile. 2018.
- Director of “*Análisis de requisitos de software para un sistema de costos orientado a empresas de arquitectura y diseño de edificios y oficinas*”. Funded by “World Class Engineering at Regional State Universities in the Central-South of Chile (I2030)”, CORFO Project Nr. 14ENI2-26866. March - June 2017.
- Director of “*Estudio de viabilidad de la implementación de un software para la automatización de procesos críticos en Microempresas*”.

Funded by “World Class Engineering at Regional State Universities in the Central-South of Chile (I2030)”, CORFO Project Nr. 14ENI2-26866. December 2016 - June 2017

## 9 Publications

### International Journals

- “*Foundations of Modern Graph Query Languages*”. R. Angles, M. Arenas, P. Barcelo, A. Hogan, J. Reutter and D. Vrgoc. ACM Computing Surveys (CSUR), Volume 50, Issue 5, September 2017.
- “*On the formulation of performant SPARQL queries*”. A. Loizou, R. Angles, P. Groth. Web Semantics: Science, Services and Agents on the World Wide Web, Volume 31, Pages 1 – 26, March 2015.
- “*The Linked Data Benchmark Council: a Graph and RDF industry benchmarking effort*”. R. Angles, Peter Boncz, Josep Larriba-Pey, Irini Fundulaki, Thomas Neumann, Orri Erling, Peter Neubauer, Norbert Martinez-Bazan, Venelin Kotsev, and Ioan Toma. Sigmod Record, Volume 43, Issue 1, March 2014.
- “*Benchmarking Linked Open Data Management Systems*”. R. Angles, M-D. Pham and P. Boncz. ERCIM News, Number 96, pp. 24-25, January 2014.
- “*Survey of graph database models*”. R. Angles and C. Gutierrez. ACM Computing Surveys (CSUR), Volume 40, Issue 1, February 2008.

### Regional Journals

- “*Un sistema de discusión seguro con participación anónima a través de servicios Web*”. D. Vásquez, N. Cerpa and R. Angles. Ingeniare - Revista Chilena de Ingeniería, Vol. 21, Number 1, pp. 82-98, 2013.

### International Conferences

- “*The multiset semantics of SPARQL patterns*”. R. Angles and Claudio Gutierrez. 15th International Semantic Web Conference (ISWC), LNCS 9981, pp. 20-36. Kobe, Japan, Oct. 2016. **Best Paper Award winner.**

- “*Latin American Perspectives to Internationalize Undergraduate Information Technology Education*”. M. Sabin, B. Viola, J. Impagliazzo, R. Angles, M. Curiel, P. Leger, J. Murillo, H. Nina, J. A. Pow-Sang and I. Trejos. Proceedings of the 2016 ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE 2016). Arequipa, Perú, July 2016.
- “*Negation in SPARQL*”. R. Angles and Claudio Gutierrez. 10th Alberto Mendelzon International Workshop on Foundations of Data Management (AMW), CEUR Vol. 1644. Panama City, Panama, May 8-10, 2016.
- “*Comparison of methods to assess similarity between phrases*”. R. Angles, V. Araya, J. Concha and R. Paredes. 19th Iberoamerican Congress on Pattern Recognition (CIARP’2014), LNCS, Vol. 8827, pp. 255 – 263. Puerto Vallarta, Mexico, Nov. 2014.
- “*How to generate query parameters in RDF benchmarks?*”. A. Gubichev, R. Angles and P. Boncz. Data Engineering meets the Semantic Web (DESWeb) - Workshop co-located with IEEE International Conference on Data Engineering (ICDE’2014). Chicago IL, USA, March 2014.
- “*Negation in SPARQL*”. R. Angles and C. Gutierrez. 8th Alberto Mendelzon International Workshop on Foundations of Data Management (AMW). Cartagena, Colombia, June 2-6, 2014.
- “*Benchmarking database systems for social network applications*”. R. Angles, A. Prat-Pérez, D. Dominguez-Sal and J. L. Larriba Pey. Graph Data-management Experiences and Systems (GRADES) - Workshop co-located with SIGMOD/PODS. New York, USA, June 2013.
- “*A Practical Query Language for Graph Databases*”. R. Angles, P. Barceló and G. Ríos. 7th Alberto Mendelzon International Workshop on Foundations of Data Management (AMW). Puebla-Cholula, México, May 2013.
- “*A Comparison of Current Graph Database Models*”. R. Angles. 3rd International Workshop on Graph Data Management: Techniques and Applications (GDM) - In Conjunction with IEEE International Conference on Data Engineering (ICDE 2012). Washington DC, USA, April, 2012.

- “*Web-based Refining of Machine Translations*”. R. Angles, R. Paredes, F. Meza, M. Gutiérrez, F. Valdebenito and D. Yañez. XXX International Conference of the Chilean Computer Science Society (SCCC). Curicó, Chile, Nov. 2011.
- “*Subqueries in SPARQL*”. R. Angles and C. Gutierrez. 5th Alberto Mendelzon Workshop on Foundations of Data Management (AMW). Santiago, Chile, May 2011.
- “*SQL Nested Queries in SPARQL*”. R. Angles and C. Gutierrez. 4th Alberto Mendelzon Workshop on Foundations of Data Management (AMW). Buenos Aires, Argentina, May 2010.
- “*A Nested Graph Model for Visualizing RDF Data*”. R. Angles. 3th Alberto Mendelzon Workshop on Foundations of Data Management (AMW). Arequipa, Perú, May 2009.
- “*The Expressive Power of SPARQL*”. R. Angles and C. Gutierrez. 7th International Semantic Web Conference (ISWC). Karlsruhe, Germany, Oct. 2008. Springer, Lecture Notes in Computer Science, Volume 5318, pp. 114 – 129.
- “*Querying RDF Data from a Graph Database Perspective*”. R. Angles and C. Gutierrez. 2nd European Semantic Web Conference (ESWC). Heraklion, Greece, May – June, 2005. Springer, Lecture Notes in Computer Science, Volume 3532, pp. 346-360.

### National and Regional Conferences

- “*Supporting Property Graphs in Apache Giraph*”. R. Angles, F. Meza and F. Moya. Latin American Symposium on Data Management Systems (SLMDI), held in conjunction with Latin American Computing Conference (CLEI). Valparaiso, Chile, Oct. 2016.
- “*Graph Database Modeling Supporting RDF*”. R. Angles. Workshop of Databases, Jornadas Chilenas de Computación. Iquique, Chile, Nov. 2007.

### Book Chapters

- *Documentación Electrónica e Interoperabilidad de la Información, Chapter II: XML*. A. Bórquez and C. Gutierrez and R. Angles. Publication of the Universidad de Chile. Julio 2009.

## 10 Talks

### Talks at International Events

- “*Managing RDF data with graph databases*”. 3rd Workshop on Graph-based Technologies and Applications (Graph-TA). Barcelona, Spain, March 2015.
- “*A Nested Graph Model for Visualizing RDF Data*”. 3th Alberto Mendelzon Workshop on Foundations of Data Management (AMW). Arequipa, Perú, May 2009.
- “*The Expressive Power of SPARQL*”. 7th International Semantic Web Conference (ISWC). Karlsruhe, Germany, Oct. 2008.
- “*Graph database model supporting RDF*”. South American Database School and 2nd. Workshop on Foundations on Databases and the Web. Punta del Este, Uruguay, October 2007.

### Talks at National and Regional Events

- “*The Expressive Power of SPARQL*” (*in Spanish*). Workshop of Graduate Students in Computer Science, Jornadas Chilenas de Computación. Punta Arenas, Chile, Nov. 2008.
- “*Graph Database Modeling Supporting RDF*” (*in Spanish*). Workshop of Databases, Jornadas Chilenas de Computación. Iquique, Chile, Nov. 2007.
- “*RDF Databases*” (*in Spanish*). Postgraduate Seminar, Dept. of Computer Science, Universidad de Chile. April 2007.

## 11 Scholarships and Grants

### Scholarships

- Ph.D. Thesis Completion Scholarship given by NIC Chile (Network Information Center), Faculty of Physics and Mathematical Sciences, Universidad de Chile. 2008.
- Doctoral Scholarship given by the DCC-UChile, through the MECESUP Project UCH0109 (Ministry of Education and Universidad de Chile). To support the studies of the Ph.D. Program in Computer Science. 2004 – 2007.



- Scholarship given by the Faculty of Physics and Mathematical Sciences, Universidad de Chile. To support the 2nd and 3rd semesters of the MSc. in Computer Science. 2003.

### **Travel Grants**

- ISWC 2008 student fellowship, to attend the 7th International Semantic Web Conference, Karlsruhe, Germany, October 2008.
- Conicyt 2008 travel grant (Chile), “Programa de apoyo a la participación de estudiantes de doctorado en reuniones de sociedades científicas nacionales y en congresos internacionales en Chile (2008)”, to attend the Encuentro de Tesistas, Jornadas Chilenas de Computación, Nov. 2008.
- Conicyt 2007 travel grant (Chile), “Programa de apoyo a la participación de estudiantes de doctorado en reuniones de sociedades científicas nacionales y en congresos internacionales en Chile”, to attend the Workshop on Databases, Jornadas Chilenas de Computación. Nov. 2007.
- DCC-UChile travel grant, through the MECESUP Project UCH0109, to attend the 2nd European Semantic Web Conference, Greece, May 29 – June 1, 2005. Also supported by the Millenium Nucleus, Center for Web Research (P01-029-F), Chile.
- DCC-UChile travel grant, through the MECESUP Project UCH0109, to support a research stay in the Dept. of Computer and Information Science, University of Konstanz, Germany. June 4 – 30, 2005.

## **12 Research and Scientific Activities**

### **Research Stays**

- “Graph drawing and data structures for external memory”. Research Group of Algorithms, Department of Computer and Information Science, University of Konstanz, Germany. Supervisor, Prof. Ulrik Brandes. Junio 4 – 30, 2005.

### **Conference and Workshop Organization**

- Chair of the Latin American Symposium on Innovative Data Systems (part of XLI Latin American Conference on Informatics, CLEI), Arequipa, Perú, October 19-23, 2015.
- Jornadas Chilenas de Computación 2011. Curicó, Chile, Nov 2011. As President of the Organizing Committee.
- 3th Alberto Mendelzon Workshop on Foundations of Data Management (AMW). Arequipa, Perú, Mayo 2009. Member of the Organization Committee.

### **Conference & Workshop Program Committees**

- Latin American Computing Conference (CLEI). 2016.
- International Conference of the Chilean Computer Science Society (SCC). 2010 – 2015.
- Conference on Artificial Intelligence (Special Track on AI and the Web). 2015.
- Graph Data-management Experiences and Systems Workshop (GRADES). 2014-2016.
- Jornadas Peruanas de Computación (JPP). 2007, 2008, 2010, 2011, 2013.
- Alberto Mendelzon Workshop on Foundations of Data Management (AMW). 2011.
- International Workshop on Graph Data Management: Techniques and Applications (GDM). 2013.
- International Semantic Web Conference (Posters and Demonstrations Track). 2010.
- Congreso Iberoamericano de Educación Superior en Computación (CI-ESC). 2010.
- Seminario Internacional de Informática. 2006.

### Reviewer in Journals

- Artificial Intelligence Journal. 2014.
- The Semantic Web Journal. 2010.
- Journal of Theoretical and Applied Electronic Commerce Research. 2009 – 2014.

## 13 Academic Experience

### Courses at Universidad de Talca .

Undergraduate courses

- Civil Engineering in Computation:
  - Databases Design (2015-1, 2015-2, 2016-1, 2016-2, 2017-1, 2017-2)
  - Databases management (2016-1)
  - The Semantic Web (2016-2)
  - Big Data (2017-2)
  - Databases (2009-2, 2010-2, 2011-2, 2012-2, 2014-2)
  - Advanced Databases (2011-1, 2011-2, 2012-2, 2014-2)
  - Mobile Technologies (2015-1, 2017-1)
  - The Web of Data (2014-1)
  - Graph Databases (2012-1)
  - XML Databases (2009-2, 2010-1)
  - Software Development Methodologies (2009-1, 2010-1, 2011-1)
  - Software Development Project (2009-1, 2010-2)
  - Software Design (2009-1)

### Courses at Universidad de Chile .

Undergraduate courses

- Civil Engineering in Computation: Teaching Assistant in Databases (2003-2, 2004-1, 2004-2), Software Engineering (2003-1), Programming II (2003-1).

#### Capacitation courses (Continuous Education Program)

- “Introduction to Microsoft Windows XP and Office”. Course for members of the Legal Medical Service (Chile). Duration, 30 hrs. Sept. 2007.
- “Intermediate Microsoft Office”. Course for members of the Legal Medical Service (Chile). Duration, 30 hrs. Aug. 2007.
- “Introduction to Microsoft Windows XP and Office”. Course for members of the Legal Medical Service (Chile). Duration, 30 hrs. July 2007.
- “XML and Electronic Documentation”. Course for members of the Education Ministry (Chile). Duration, 24 hrs. Oct. 2006.
- “XML and Electronic Documentation”. Diploma in Electronic Documentation and Information Interoperability. Duration, 24 hrs. Fall 2006.
- “XML and Electronic Documentation”. Course for members of the Superintendencia de AFP. Duration, 24 hrs. Sept. 2005.
- “Advance Development Applications in .NET framework”. Course for Telefónica Mobil (Chile). Duration, 30 hrs. Sept. – Oct. 2004.
- “Web Development with PHP”. May 2003.

## 14 Students

Advisor of undergraduate Students in the School of Civil Engineering in Computation, Universidad de Talca, Chile.

- Miguel A. Arenas Santander. “Aplicación móvil para el Autoaprendizaje de Lengua de Señas Chilena”. Diciembre 2017.
- Matías Diaz Besoain. “Diseño e Implementación de algoritmos de grafos para Apache Giraph”. August 2017.
- Diego Cisterna Vásquez. “Diseño de una interfaz gráfica para búsqueda de patrones estructurales en el Protein Data Bank”. July 2017.
- Mauricio Orellana Galaz. “Diseño de un workload real para un benchmark de bases de datos de grafos”. July 2017.

- Jorge Hernán Trejo Fuentes. “Aplicación de software para una red social orientada a eventos georeferenciados”. January 2017.
- Ana María E. Gonzalez Contreras. “Diseño de una base de datos relacional para el Protein Data Bank”. July 2016.
- Karen E. Muñoz González. “Diseño de una interfaz gráfica para consultas SPARQL”. July 2016.
- Hernán Garrido Arce. “Desarrollo de software usando el patrón de inyección de dependencias”. December 2015.
- Sergio A. Silva Rubio. “Methods for managing RDF data using graph databases”. January 2015.
- Jacqueline A. Villarroel Valenzuela . “Managing biological data with semantic web databases”. December 2014.
- Roberto A. García Segura. “Development of a benchmark for graph databases oriented to path queries”. July 2014.
- José A. Bravo Muñoz. “Development of a web manager for the graph data management system DEX”. April 2014.
- Raúl Orlando López Días. “Software for managing and tracking of online programming tasks”. April 2014.
- Sebastián N. Arancibia Olgún. “Data generation for benchmarking of graph databases”. October 2012.
- Camilo A. Verdugo Gunther. “Development of a framework for offering and evaluation of teleworking”. August 2012.
- Claudio Cornejo Díaz. “Study and comparison of graph-oriented databases”. May 2012.
- Marcos Gutiérrez Sotomayor. “Study, definition and implementation of similarity criteria for phrases”. May 2012.
- Paula Ramos Alcázar. “Verification of RDF integrity constraints using SPARQL”. March 2012.
- María José Bustamante Jofré. “Implementation of a mapping to transform relational databases to RDF”. December 2011.
- Alexis A. Leiva Orellana. “Implementation of compositional SPARQL with SQL-based subqueries”. September 2011.

## 15 Professional Experience

- Webmaster of the Dept. of Computer Science Website (Extension Section), Universidad de Chile. 2004 – 2007.
- Manager of the “Users Administrator System for the Intranet”, at DCC-UChile. 2003 – 2007.
- Analysis and implementation of the “Users Administrator System for the Intranet”, at DCC-UChile. Development in PHP. April - Dec. 2003.
- Analysis and implementation of the “Liquidations System”, at Centro de Acopio de Leche “el Pedregal” Majes, Arequipa, Perú. Development in Visual Basic 6.0. Jan. - Feb. 2000.

### Technical Skills

- RDF, RDF Schema, SPARQL (Advanced)
- XML, XML Schema, XPath, XQuery, XSLT, XSL-FO (Advanced).
- Java, JSP, JavaBeans, Servlets (Intermediate).
- Microsoft .NET Framework, VB.NET, Windows Forms, ASP.NET, C# (Intermediate).
- Microsoft Visual Basic 6, WinAPI, ASP. MCSD Certification (Advanced).
- Microsoft Visual C++ 6, MFC, WinAPI (Basic).
- Microsoft SQL Server, Installation and Administration (Basic).
- MySQL and PostgreSQL, Configuration and Administration, indexing, pl/pgsql programming (Intermediate).
- PHP, HTML, JavaScript, VBScript (Intermediate).
- Oracle JDeveloper 10g (Basic).
- Oracle 8i, Configuration and Administration (Basic).
- RedHat Linux 7.1, Configuration and Administration (Intermediate).
- Borland C++ Builder (Intermediate)

## 16 Extensional Courses

- English Course (Advanced Level IC6). Instituto Chileno Norteamericano de Cultura, Santiago, Chile. March 2007 – June 2007.
- English Course (Intermediate Levels 3 and 4). Berlitz Language Center, Santiago, Chile. Oct. 2004 - May 2005.
- Microsoft Certified Solution Developer (MCSD). New Horizons - Computer Learning Centers, Lima, Perú. March – May 2002.
- English Course (Intermediate Level). Language Institute, Universidad Católica de Santa María, Arequipa, Perú. March – May 2005.
- Configuration and Administration of Linux Servers (RedHat 7.1). Technological Superior Institute TECSUP, Arequipa, Perú. Duration, 120 hrs. June - Nov. 2001.