

# Martín Rezk

*Ph.D.*

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## Professional Summary

Seasoned technology leader with over 12 years of experience in architecting, designing, and delivering complex, n-tier distributed applications and large-scale data pipelines. A Ph.D. with a proven track record of leading high-performing engineering teams and acting as a thought leader in the domains of Semantic Technology, Knowledge Graphs, and AI/NLP. Combines technical expertise in Python, C++ and distributed processing with business acumen to translate complex business requirements into innovative, scalable, and resilient technology solutions.

## Professional Experience

2019–Present **Senior Ontologist**, *Google*, USA.

- Led the design and development of innovative NLP and Knowledge Representation projects for Google Search, directly impacting user experience through enhanced structured information extraction, language generation, and semantic query answering.
- Architected and implemented scalable systems leveraging Machine Learning, Large Language Models (LLMs), and formal reasoning to build and enhance enterprise-scale knowledge graphs and retrieval systems.
- Collaborated closely with product and business stakeholders to define requirements and deliver solutions in a fast-paced, agile environment.

2015–2019 **Data Scientist**, *Rakuten Inc.*, Japan.

- Led an international team of data scientists and engineers in a strategic project focused on semantic information extraction from multi-lingual text (Japanese, German, French, Mandarin, English).
- Directed the modeling and integration of semantic data to build out a comprehensive knowledge base, supporting downstream applications in market segmentation and financial analysis.

2013–2015 **Postdoctoral Fellow / Team Leader (-ontop- Project)**, *Free University Bozen-Bolzano*, Italy, Project Title: Optique: Scalable End-User Access to Big Data.

- Led the development team for the *-ontop-* project, an Ontology-Based Data Access (OBDA) system for querying large-scale relational databases using semantic technologies.
- Directed the architecture and implementation of a high-performance SPARQL query engine, focusing on efficient translation to SQL through advanced query rewriting techniques.
- Championed the engineering of robust ontologies (OWL) and mappings (R2RML) and was responsible for system design, implementation, and testing.

2012–2013 **Postdoctoral Fellow**, *Korea Advanced Institute of Science and Technology*, South Korea, Project Title: LOD2: Creating Knowledge out of Interlinked Data.

- Designed and developed a data pipeline to integrate NLP tools for Korean text processing, transforming unstructured text into structured RDF knowledge graphs for the web.

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## Technical Skills

<b>Languages</b>	Python, C++, SQL, Java
<b>Semantic &amp; Graph Tech</b>	Graph DB (Stardog), Knowledge Graphs, Ontology (OWL, RDF), SPARQL, R2RML, Graph Analytics & Inferencing, Logic-based Reasoning, Semantic Web Frameworks (Jena, Ontop)
<b>Architecture &amp; Design</b>	Scalable System Design, Data Pipeline Architecture, API Design (REST, SPARQL)
<b>AI / ML / NLP</b>	Large Language Models (LLMs), Information Extraction, NLP, Deep Learning (NN, RNN), Vector Retrieval (ScaNN), Data Modeling
<b>DevOps &amp; Cloud</b>	Agile Development Git, Build/Test Automation, AWS
<b>Databases</b>	SQL (PostgreSQL, Oracle, DB2, MySQL), NoSQL (MongoDB), Query Tuning
<b>ETL</b>	Custom ETL & Data Pipeline Development (Python, SQL, Shell Scripting)
<b>OS</b>	Linux/Unix, Shell Scripting

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## Education

- 2008–2012 **Ph.D. in Computer Science**, *Free University of Bozen-Bolzano*, Italy, *Dissertation: Reasoning about Actions in Transaction Logic*.
- 2004–2007 **M.S. in Computer Science**, *Universidad Nacional de Córdoba*, Argentina.
- 2000–2004 **B.S. in Computer Science**, *Universidad Nacional de Córdoba*, Argentina.

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## Patents & Selected Publications

### Patents

- 2018 **Pending**, *PCT/JP2018/036461*, Japan.
- 2016 **Pending**, *PCT/JP2016/080422*, Japan.

### Selected Publications

- D. Calvanese, et al. *Ontop: Answering SPARQL queries over relational databases*. Semantic Web Journal (2016). **(Best Journal Paper Award)**
- M. Rodríguez-Muro and M. Rezk. *Efficient SPARQL-to-SQL with R2RML mappings*. Journal of Web Semantics (2015).
- L. Alonso Alemany, et al. *Accurate Product Attribute Extraction on the Field*. IEEE ICDE (2019).
- R. Kontchakov, et al. *Answering SPARQL Queries over Databases and under OWL 2 QL Entailment Regime*. ISWC (2014).
- Full list available at: <https://scholar.google.it/citations?user=CqDcFtoAAAAJ&hl=en>

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## Selected Presentations & Research Visits

- June/14 **Collaboration**, *IBM T.J. Watson Research Center*, New York, USA.  
Topic: SPARQL-OWL Entailment Regime. Invited by Dr. Mariano Rodríguez-Muro.

- 2018 **Invited Talk**, *Accurate Semantic Information Extraction in Rakuten*, University of Oslo, Norway.
- 2016 **Industry Talk**, *On Extracting and Using Semantic Information*, Xerox, France.
- 2015 **Tutorial**, *Ontology-based Data Access: From Theory to Practice*, ISWC, USA.

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## Languages

Spanish **Native Speaker**  
English **Fluent**  
Italian **Intermediate**  
Japanese **Beginner**