Sebastián Ferrada

✉ sebastian.ferrada@uchile.cl
🏠 http://sferrada.com

Education and Academic Degrees

2021 **Ph.D. in Computer Science**, *Universidad de Chile*, Santiago, Chile.
Thesis: Similarity-based Web Queries.
Supervisors: Aidan Hogan and Benjamin Bustos.

2017 **M.Sc. in Computer Science**, *Universidad de Chile*, Santiago, Chile.
Thesis: IMGPEDIA: a Large-scale Knowledge-base to Perform Visuo-semantic Queries over Wikimedia Commons Images.
Supervisors: Aidan Hogan and Benjamin Bustos.

2017 **Computer Science Engineering**, *Universidad de Chile*, Santiago, Chile.

2015 **B.Sc. in Engineering Sciences, major in Computer Science**, *Universidad de Chile*, Santiago, Chile.

Academic Positions

2024–Now **Assistant Professor**, *Data & Artificial Intelligence Initiative (IDIA). Universidad de Chile*, Santiago, Chile.

2025–Now **Young Researcher**, *Millennium Institute for Foundational Research on Data (IMFD)*, Santiago, Chile.

2024–Now **Collaborating Researcher**, *National Center for Artificial Intelligence Research (CENIA)*, Santiago, Chile.

2024–2025 **Collaborating Researcher**, *Millennium Institute for Foundational Research on Data (IMFD)*, Santiago, Chile.

2023–2024 **Postdoctoral Researcher**, *Department of Computer Science. Universidad de Chile*, Santiago, Chile.

2021–2023 **Postdoctoral Researcher**, *Department of Computer and Information Science (IDA). Linköping University*, Linköping, Sweden. (Mentored by Olaf Hartig).

Research Projects

As Principal Investigator

2025–2027 **Knowledge Graph Extraction from Tabular Sources**, *Fondecyt de Iniciación en Investigación 2025*, Proyecto Nr. 11251322.

2024–2026 **Desarrollo de Procesos de Inteligencia Artificial sobre Bases de Datos de Grafo**, *U-Inicia (Concurso de Reforzamiento de Inserción en Investigación de Nuevos Académicos de la Vicerrectoría de Investigación y Desarrollo U. de Chile, 2024)*.

As Researcher

2023–2024 **Developing the Foundations and Applications of Path Manipulation Operations**, *FONDECYT Regular Research Project Nr. 1221727*, Role: Research Assistant.
Principal Investigator: Renzo Angles.

2021–2023 **Interoperability and Integration of Graph Database Models**, *Swedish Research Council (Vetenskapsrådet) Project Nr. 2019-056*, Role: Postdoctoral Researcher.
Principal Investigator: Olaf Hartig.

2017 **Adoption-driven Specification of Semantic Web Language Profiles**, *FONDECYT Initiation Project Nr. 11140900*, Role: PhD Student.
Principal Investigator: Aidan Hogan.

2015–2016 **IMGpedia: a Large-Scale Knowledge-base to Perform Visuo-semantic Queries**, *Millennium Nucleus – Centre for Semantic Web Research*, Role: MSc. Student.

Publications

Journal Papers

[1] **Sebastián Ferrada**, Aidan Hogan and Benjamin Bustos. *Similarity Joins and Clustering for SPARQL*. Semantic Web Journal. 2024.

[2] Renzo Angles, **Sebastián Ferrada** and Ignacio Burgos. *The Property Graph Data Format (PGDF)*. IEEE Access. 2024.

[3] **Sebastián Ferrada**, Benjamin Bustos and Nora Reyes. *An Efficient Algorithm for Approximated Self-similarity Joins in Metric Spaces*. Information Systems. 2020.

Conference Papers

[4] Vicente Calisto, **Sebastián Ferrada**, Gonzalo Navarro, Juan Reutter, Juan Pablo Sánchez, and Domagoj Vrgoč. *Graph Querying or Similarity Search? Both!*. International Semantic Web Conference. Nara, Japan, Nov. 2–6, 2025 (to appear).

[5] Julián Arenas-Guerrero and **Sebastián Ferrada**. *COTTAS: Columnas Triple Table Storage for Efficient and Compressed RDF Management*. International Semantic Web Conference. Nara, Japan, Nov. 2–6, 2025 (to appear).

[6] Sijin Cheng, **Sebastián Ferrada** and Olaf Hartig. *Considering Vocabulary Mappings in Query Plans for Federations of RDF Data Sources*. International Conference on Cooperative Information Systems. Groningen, The Netherlands, Oct. 30–Nov. 3, 2023.

[7] **Sebastián Ferrada**, Aidan Hogan and Benjamin Bustos. *Extending SPARQL with Similarity Joins*. International Semantic Web Conference. Athens, Greece [Online], Nov. 2—6, 2020.

[8] **Sebastián Ferrada**, Aidan Hogan and Benjamin Bustos. *IMGpedia: a linked dataset with content-based analysis of Wikimedia images*. International Semantic Web Conference. Vienna, Austria, Oct. 21—25, 2017.

Workshop Papers

[9] Matías López, **Sebastián Ferrada** and Aidan Hogan. *ERDoc: A Web Interface for Entity–Relation Modelling*. 3rd International Workshop on Data Systems Education. Santiago, Chile, June 9, 2024.

[10] Renzo Angles, Vicente Calisto, Javiera Díaz, **Sebastián Ferrada**, Aidan Hogan, Alexander Pinto, Juan Reutter, Carlos Rojas, Henry Rosales-Méndez, Hernan Sarmiento, Etienne Toussaint, and Domagoj Vrgoč. *TelarKG: a Knowledge Graph of Chile's Constitutional Process*. In Proc. 7th Joint Workshop on Graph Data Management Experiences & Systems (GRADES) and Network Data Analytics (NDA). Santiago, Chile, June 14, 2024.

[11] Shahrzad Khayatbashi, **Sebastián Ferrada** and Olaf Hartig. *Converting Property Graphs to RDF: A Preliminary Study of the Practical Impact of Different Mappings*. In Proc. 5th Joint Workshop on Graph Data Management Experiences & Systems (GRADES) and Network Data Analytics (NDA). Philadelphia, PA, USA, June 12, 2022.

[12] **Sebastián Ferrada**, Benjamin Bustos and Nora Reyes. *A Simple, Efficient, Parallelizable Algorithm for Approximated Nearest Neighbors*. In Proc. 12 Alberto Mendelzon International Workshop on Foundations of Data Management (AMW). Cali, Colombia, May 21–25, 2018.

[13] **Sebastián Ferrada**, Nicolás Bravo, Aidan Hogan and Benjamin Bustos. *Querying Wikimedia Images using Wikidata Facts*. Companion Proc. of The Web Conference 2018. Lyon, France, Apr. 25, 2018.

[14] **Sebastián Ferrada**, Aidan Hogan and Benjamin Bustos. *IMGpedia: Enriching the Web of Data with Image Content Analysis*. In Proc. 10 Alberto Mendelzon International Workshop on Foundations of Data Management (AMW). Panama City, Panama, June 6–10, 2016.

Poster & Demo Papers

[15] **Sebastián Ferrada**. *Extracting Graphs from Tables via Conceptual Models*. International Semantic Web Conference, Posters and Demos. Baltimore, MD, USA, Nov. 11, 2024.

[16] Valentina Esteban, Ivana Bachmann and **Sebastián Ferrada**. *Poster: Application of Graph Neural Networks for Representing and Analyzing the Internet Topology via the BGP Protocol*. Companion of the Internet Measurement Conference. Madrid, Spain, Nov. 4–6, 2024.

[17] Domagoj Vrgoč, Carlos Rojas, Renzo Angles, Marcelo Arenas, Vicente Calisto, Benjamín Farías, **Sebastián Ferrada**, Tristan Heuer, Aidan Hogan, Gonzalo Navarro, Alexander Pinto, Juan Reutter, Henry Rosales and Etienne Toussaint. *MillenniumDB: A Multimodal, Multi-model Graph Database*. Companion of the 2024 International Conference on Management of Data. Santiago, Chile, June 11, 2024.

[18] **Sebastián Ferrada**, Aidan Hogan and Benjamin Bustos. *Answering Visuo-semantic Queries with IMGpedia*. International Semantic Web Conference, Posters and Demos. Vienna, Austria, Oct. 23, 2017.

Honours and Awards

2024   **Outstanding PC Member**, at the 23rd International Semantic Web Conference.

2024   **Honorable Mention, Best Demonstration Award**, for *MillenniumDB: A Multi-modal, Multi-model Graph Database*, at SIGMOD/PODS '24.

2023   **Best Paper Award**, for *Considering Vocabulary Mappings in Query Plans for Federations of RDF Data Sources*, at the 29th International Conference on Cooperative Information Systems.

2018   **First Prize**, at the 25th Latin American Contest of Master Thesis, organised by the Latin American Center for Computing Studies.

2018   **Best Graduate**, Distinction awarded by the Chilean Association of Engineers to top recently graduated engineers from Chilean universities.

2017   **Best Student Paper Award**, Resources track, for *IMGpedia: a Linked dataset with Content-based analysis of Wikimedia Images*, at the 16th International Semantic Web Conference.

2017   **Best Poster Award**, for *Answering Visuo-semantic Queries with IMGpedia*, at the 16th International Semantic Web Conference.

Community Service

Scientific Journal Duties

Since 2023   **Transactions on Graph Data and Knowledge (TGDK)**, *Editorial Board Member*.

2024   **Very Large Databases Journal (VLDBJ)**, *Reviewer*.

2023   **Semantic Web Journal (SWJ)**, *Reviewer for the Special Issue on Tools & Systems*.

Conference Programme Committees

2022–2025   **The Web Conference**,
Programme Committee Member, Semantics and Knowledge Track.

2021–2025   **International Semantic Web Conference (ISWC)**,
Programme Committee Member, Research Track.

2025   **International Semantic Web Conference (ISWC)**,
Programme Committee Member, Resources Track.

2024–2025   **International Semantic Web Conference (ISWC)**,
Programme Committee Member, Poster & Demo Track.

2025   **The Web Conference**,
Programme Committee Member, Doctoral Symposium Track.

2023–2024   **Extended Semantic Web Conference (ESWC)**,
Programme Committee Member, Research Track & Resources Track.

2021–2024   **Extended Semantic Web Conference (ESWC)**,
Programme Committee Member, Poster and Demo Track.

2024–2025 **Wiki Workshop**,
Programme Committee Member, Organized by the Wikimedia Foundation.

2023–2024 **International Workshop on Data Management for Knowledge Graphs (DMKG)**,
Programme Committee Member, co-located with ESWC 2023.

2021 **Wikidata Workshop**,
Programme Committee Member, co-located with ISWC 2021.

2020 **European Conference in Artificial Intelligence (ECAI)**,
Programme Committee Member.

Scientific Event Organization

2025 **13th International Conference on Knowledge Capture**, *Dec 10–12, Dayton*, OH, USA, Program Co-Chair.

2025 **24th International Semantic Web Conference**, *Nov 2–6, Nara*, Japan, Proceedings and Metadata Co-Chair.

2024 **23rd International Semantic Web Conference**, *Nov. 11–15, Baltimore*, MD, USA, Web Presence and Publicity Co-Chair.

2024 **17th LDBC Technical User Meeting**, *June 9, Santiago*, Chile, Co-Organizer.

2023 **15th Alberto Mendelzon International Workshop on Foundations of Data Management (AMW)**, *May 22–26, Santiago*, Chile, Local Organization Chair.

Tutorials

Jun. 2023 **Summer Institute of Computational Social Science (SICSS-Chile)**, *"An Introduction to Knowledge Graphs"*, Santiago, Chile.

Student Supervision

Graduate Students

○ **Benito Fuentes**,
Thesis: "Implementation of Algorithms for Graph Analytics in Secondary Memory".
M.Sc. in Data Science, Universidad de Chile. Ongoing. Role: Supervisor

○ **Rodrigo Molina**,
Thesis: "A Knowledge Graph to Analyze the Chilean Research Network".
M.Sc. in Data Science, Universidad de Chile. Ongoing. Role: Supervisor

○ **Matías Donoso**,
Thesis: "A Multimodal Graph for Benchmarking Machine Learning Tasks".
M.Sc. in Data Science, Universidad de Chile. Ongoing. Role: Supervisor, co-supervised with Aidan Hogan

○ **Valentina Esteban**,
Thesis: "Use of GNNs to predict BGP network resilience metrics".
M.Sc. in Computer Science, Universidad de Chile. Ongoing. Role: Supervisor, co-supervised with Ivana Bachmann

- **Ignacio Burgos**,
  Thesis: "Custom Mappings from Relational Databases to Labelled Property Graphs".
  M.Sc. in Computer Science, Universidad de Chile. Ongoing. Role: Supervisor

- **Juliette Winneroth**,
  Thesis: "Using Vocabulary Mappings for Federated RDF Query Processing".
  M.Sc. in Computer Science, Linköping University. Graduated June 2023. Role: Supervisor

- **Wiktor Karlsson**,
  Thesis: "Integrating GraphQL APIs into an RDF Federation".
  M.Sc. in Computer Science, Linköping University. Graduated in February 2023. Role: Supervisor

Undergraduate Students

- **Antonio Vitalic**,
  Thesis: "Aplicación Web para Gestión de Grafo de Conocimiento del Museo de Arte Popular Americano".
  B.Sc. in Computer Science, Universidad de Chile. Ongoing. Role: Supervisor, co-supervised with Benjamin Bustos

- **Emmanuel Faúndez**,
  Thesis: "Renovación de IMGpedia: Migración y Habilitación de Consultas por Similitud Dinámicas".
  B.Sc. in Computer Science, Universidad de Chile. Ongoing. Role: Supervisor

- **Jessica Gajardo**,
  Thesis: "Construcción Automática de un Grafo de Conocimiento de Eventos Noticiosos Utilizando Tweets para Análisis Retrospectivo Histórico".
  B.Sc. in Computer Science, Universidad de Chile. Ongoing. Role: Supervisor

- **Sergio Gálvez**,
  Thesis: "Diseño e Implementación de Base de Datos de Grafos Aplicada a Museo de la Universidad de Chile".
  B.Sc. in Computer Science, Universidad de Chile. Graduated in April 2025. Role: Supervisor, co-supervised with Benjamin Bustos

- **Agustín Valenzuela**,
  Thesis: "Analítica de Datos Astronómicos Masivos utilizando Bases de Datos Vectoriales".
  B.Sc. in Computer Science, Universidad de Chile. Graduated in April 2025. Role: Supervisor

- **Matías López**,
  Thesis: "Web Application for Relational Database Design".
  B.Sc. in Computer Science, Universidad de Chile. Graduated in March 2024. Role: Supervisor, co-supervised with Aidan Hogan

- **Milton Chowdary**,
  Thesis: "Automated visualisation of product deployment in a cloud environment".
  B.Sc. in Computer Science, Linköping University. Graduated in April 2022. Role: Examiner, de facto Supervisor

Teaching

- **Databases**, *MDS, U. de Chile*, Spring 2024, Autumn 2025.
  Course level: undergraduate
  Role: Lecturer (profesor de cátedra)
- **Knowledge Graphs**, *MDS, U. de Chile*, Autumn 2025.
  Course level: masters
  Role: Lecturer (profesor de cátedra)
- **Information Retrieval**, *DCC, U. de Chile*, Autumn 2020, 2021, 2022, 2023, 2024 and 2025.
  Course level: diploma
  Role: Lecturer (profesor de cátedra)
- **Database Management with Python**, *DCC, U. de Chile*, Autumn 2022, 2023, 2024 and 2025.
  Course level: extension diploma
  Role: Lecturer (profesor de cátedra)
- **Data Project**, *DCC, U. de Chile*, Annually 2022, 2023, 2024 and 2025.
  Course level: extension diploma
  Role: Co-lecturer
- **Algorithms and Data Structures**, *DCC, U. de Chile*, Spring 2023.
  Course level: undergraduate
  Role: Lecturer (profesor de cátedra)
- **Databases**, *DCC, U. de Chile*, Spring 2019, Autumn 2023.
  Course level: undergraduate
  Role: Lecturer (profesor de cátedra)
- **Semantic Web**, *IDA, Linköping University*, Spring 2023.
  Course level: PhD
  Role: Co-lecturer
- **Database Technology**, *IDA, Linköping University*, Autumn 2021 and 2022.
  Course level: undergraduate
  Role: Lab Assistant
- **Big Data Analytics**, *IDA, Linköping University*, Spring 2022.
  Course level: masters
  Role: Lab Assistant
- **Advanced Data Models and Databases**, *IDA, Linköping University*, Autumn 2021.
  Course level: masters
  Role: Co-lecturer
- **Databases**, *DCC U. de Chile*, Autumn 2014, Autumn and Spring 2016, Autumn and Spring 2017, Autumn and Spring 2018.
  Course level: undergraduate
  Role: Teaching assistant (ayudante y profesor auxiliar)
- **Relational Databases**, *DCC, U. de Chile*, Spring 2017 and Autumn 2018.
  Course level: diploma
  Role: Lecturer (profesor de cátedra)

- **Design and Programming Methodologies**, *DCC, U. de Chile*, Autumn and Spring 2014, Autumn and Spring 2015, Autumn 2017.
  Course level: undergraduate
  Role: Teaching assistant (ayudante y profesor auxiliar)
- **Algorithm Design and Analysis**, *DCC, U. de Chile*, Spring 2014, 2015, and 2016.
  Course level: undergraduate and graduate
  Role: Teaching assistant (ayudante)
- **Algorithms and Data Structures**, *DCC, U. de Chile*, Spring 2014, Autumn 2016.
  Course level: undergraduate
  Role: Teaching assistant (profesor auxiliar)
- **Content-based Image and Video Search**, *DCC, U. de Chile*, Autumn 2016.
  Course level: undergraduate and masters
  Role: Teaching assistant (ayudante)
- **Introduction to Programming**, *DCC, U. de Chile*, Spring 2015.
  Course level: undergraduate
  Role: Teaching assistant (profesor auxiliar)
- **Discrete Mathematics**, *DCC, U. de Chile*, Autumn 2015.
  Course level: undergraduate
  Role: Teaching assistant (ayudante)