Daniel Daza

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Summary

My research is focused on artificial intelligence methods for representing and learning about the world using structured data such as graphs. This ranges from methods for **constructing structured representations**, such as knowledge graph construction and maintenance with language models, to methods for **learning from structured representations**, including retrieval-augmented generation with knowledge graphs, and query answering over incomplete knowledge bases.

Work Experience

Amsterdam UMC July 2024 - Present
Postdoctoral Researcher Amsterdam, Netherlands
In collaboration with Accenture and clinicians, I do research in the field of machine learning for knowledge graphs, and its applications to rare diseases in the healthcare domain.

Vrije Universiteit Amsterdam November 2019 - June 2024
PhD Researcher Amsterdam, Netherlands
I carried research in representation learning for knowledge graphs, and in relation to the same topic I supervised bachelor and master students, and contributed to course organization and lectures.

Bosch Research Center for Artificial Intelligence May 2023 - August 2023
Research Intern Renningen, Germany
Industrial research internship on the topics of unsupervised learning on graphs for explainable similarity search.

Irdeto B.V. June 2018 - August 2018
Data Science Intern Hoofddorp, The Netherlands
Internship on the development and deployment of scalable machine learning models with Tensorflow on Kubernetes clusters and cloud storage, applied to the problem of fraud detection.

University of Amsterdam November 2018 – January 2019
Teaching Assistant Amsterdam, The Netherlands
I guided students of the master's program in Artificial Intelligence following the Natural Language Processing course.

Education

Vrije Universiteit Amsterdam September 2019 - June 2024
Doctor of Philosophy, cum laude Amsterdam, The Netherlands
Thesis: Exploiting Subgraphs and Attributes for Representation Learning on Knowledge Graphs
Supervisors: prof. Frank van Harmelen (VU Amsterdam), prof. Paul Groth (University of Amsterdam), Dr. Michael Cochez (VU Amsterdam).

University of Amsterdam September 2017 - August 2019
MSc in Artificial Intelligence, cum laude Amsterdam, The Netherlands
Thesis: A Modular Framework for Unsupervised Graph Representation Learning
Supervisor: Dr. Thomas Kipf

UD Francisco José de Caldas August 2010 - August 2016

BSc in Electronics Engineering Bogotá, Colombia
Thesis: Neural Networks for Learning and Optimizing Electrical Machine Surrogates.

Grants and Distinctions

Computing Time on National Computing Facilities (lead co-applicant) NWO, 2025
Project: *Large Laboratory Models*, awarded 300k CPU+2M GPU compute credits.

Doctorate cum laude (top 5%) Vrije Universiteit Amsterdam, 2024
Best Paper Honorable Mention Learning on Graphs Conference, 2024
Outsdanding Paper Award ICLR, 2021

Academic Service

Reviewing

Learning on Graphs Conference	2025
NeurIPS	2025
NeSy	2025
ICML	2025
The Web Conference	2020, 2024, 2025
ACM Transactions on Knowledge Discovery and Data	2023
ACL Workshop on Structured Predictions for NLP	2022
CIKM	2022
ICML Workshop on Graph Representation Learning	2020
Semantic Web Journal	2020, 2025

Tutorials

Reasoning beyond Triples: Recent Advances in Knowledge Graph Embeddings (CIKM 2023).

Invited Talks

AI & Mathematics Network, Tilburg, The Netherlands June 2025
Learning on Knowledge Graphs for Scientific Discovery

Austrian Institute of Technology, Vienna, Austria February 2024
Learning on Graphs via Multimodal Data

Deloitte, Amsterdam, The Netherlands June 2022
Learning Entity Representations from Knowledge Graphs and Textual Descriptions

Zeta Alpha, Amsterdam, The Netherlands September 2021
Inductive Entity Representations from Text via Link Prediction

King's College London, London, UK March 2021
Complex Query Answering with Neural Link Predictors

Elsevier, Amsterdam, The Netherlands February 2020
Message Passing Query Embedding

Supervision activities

Kate Jermakova, *"Structure-Aware Query Corruption in Neural Knowledge Graph Reasoning"*, (BSc thesis, VU Amsterdam, 2025).

Sławek Męczyński, *"Enhancing Link Prediction in Knowledge Graphs Through Pre-Informed Training"* (BSc thesis, VU Amsterdam, 2025).

Baradwaj Varadharajan, "*Inductive Link Prediction over Novel Relations*" (MSc thesis, University of Amsterdam, 2023).

Qingzhi Hu, "*Data Integration and Predictive Modeling for Impact Investing*" (MSc thesis, University of Amsterdam, 2022).

Fredrik Skjelvik, "*Complex Query Answering in the Biomedical Domain*" (BSc thesis, Vrije Universiteit Amsterdam, 2022).

Stefan Schouten, "*Incorporating Semantics in Knowledge Graph Embeddings*" (MSc thesis, University of Amsterdam, 2021), with Thiviyan Thanapalasingam.

Miscelaneous

University of Bergen Summer School on Knowledge Graphs June 2022
Attendee and speaker at oral presentation

Oxford Machine Learning Summer School August 2021
Attendee (5% acceptance rate)

Publications

2025

Similarity-Constrained Reweighting for Complex Query Answering on Knowledge Graphs, **Under review**.
D. Daza, A. Bernardi, L. Costabello, C. Gueret, M. Cochez, M. Schut.

Discovering Association Rules in High-Dimensional Small Tabular Data, **ECAI 2025 Workshop on Advanced Neuro-Symbolic Applications.**
E. Karabulut, D. Daza, P. Groth, V. Degeler.

Interactive Query Answering on Knowledge Graphs with Soft Entity Constraints, **Preprint**.
D. Daza, A. Bernardi, L. Costabello, C. Gueret, M. Mansoury, M. Cochez, M. Schut.

EMERGE: A Benchmark for Updating Knowledge Graphs with Emerging Textual Knowledge, **Under review**.
K. Zaporojets, D. Daza, E. Barba, I. Assent, R. Navigli, P. Groth.

GRAPES: Learning to sample graphs for scalable graph neural networks, **TMLR**.
T. Younesian, D. Daza, E. van Krieken, T. Thanapalasingam, P. Bloem.

2024

Explaining Graph Neural Networks for Node Similarity on Graphs, **Preprint**.
D. Daza, C.X. Chu, T.K. Tran, D. Stepanova, M. Cochez, P. Groth.

UnRavL: A Neuro-Symbolic Framework for Answering Graph Pattern Queries in Knowledge Graphs, **Learning on Graphs.**
🥈 *Honorable Mention for Best Paper*
T. Cucumides, D. Daza, P. Barcelo, M. Cochez, F. Geerts, J.L. Reutter, M.R. Orth.

2023

BioBLP: a modular framework for learning on multimodal biomedical knowledge graphs, **Journal of Biomedical Semantics**.
D. Daza, D. Alivanistos, P. Mitra, T. Pijnenburg, M. Cochez, P. Groth.

Adapting Neural Link Predictors for Data-Efficient Complex Query Answering, **NeurIPS**.
E. Arakelyan, P. Minervini, D. Daza, M. Cochez, Isabelle Augenstein.

Harnessing the Web and Knowledge Graphs for Automated Impact Investing Scoring, **KDD Workshop on AI for Climate Sustainability**.
Q. Hu, D. Daza, L. Swinkels, K. Ūsaitė, R. Hoen, and P. Groth .

2022

SlotGAN: Detecting Mentions in Text via Adversarial Distant Learning, in **ACL Workshop on Structured Prediction for NLP**.
D. Daza, M. Cochez, and P. Groth.

2021

Complex Query Answering with Neural Link Predictors, **ICLR**.
🏆 *Outstanding Paper Award* (top 1%)
E. Arakelyan, D. Daza, P. Minervini, and M. Cochez.

Entity Representations from Text via Link Prediction, **The Web Conference**.
D. Daza, M. Cochez, and P. Groth.

Approximate knowledge graph query answering: from ranking to binary classification, **ECAI 2020 Workshop on Graphs for Knowledge Representation and Reasoning**.
R. van Bakel, T. Aleksiev, D. Daza, D. Alivanistos, and M. Cochez.

2020

Message passing query embedding, **ICML 2020 Workshop on Graph Representation Learning**.
D. Daza and M. Cochez.