## Michael Cochez

Assistant Professor - Vrije Universiteit Amsterdam Website: https://www.cochez.nl ORCID: https://orcid.org/0000-0001-5726-4638 Scholar: https://scholar.google.com/citations?user=JuZrOtoAAAAJ

#### Self-employed - Graphino https://www.graphino.nl/

I work on Knowledge Infused Machine Learning. I am an assistant professor at the Computer Science department of the Vrije Universiteit Amsterdam, staff member of the Learning and Reasoning Group. I am the academic lab manager of the Elsevier discovery lab. I do consultancy and trainings with my own company, Graphino.

#### **Degrees and Education**

#### Ph.D. in Mathematical Information Technology

University of Jyväskylä (JYU)

- Faculty of Information Technology, Mattilanniemi 2 (P.O.Box 35), 40014 Jyväskylä (Finland)
- Research related to Knowledge Evolution, Ontology Learning and Matching, Scalable Clustering, Evolutionary Computing, and Optimization
- Dissertation Grade: excellent (highest), course work grade: excellent (highest)
- Supervisors: Prof. Vagan Terzivan (JYU) and Prof. Ferrante Neri (De Montfort University, United Kingdom - now at University of Surrey)

Master of science in Mathematical Information Technology Jvväskvlä, Finland University of Jyväskylä (JYU) 09/2009-03/2012

- Faculty of Information Technology, Mattilanniemi 2 (P.O.Box 35), 40014 Jyväskylä (Finland)
- Mobile systems study line. Minor in Physics
- Thesis Grade: very good (one to highest), course work grade: excellent (highest), physics minor: very good (one to highest)
- Advisor: Prof. Vagan Terziyan (JYU)

Bachelor in Information Technology – Great Distinction	Antwerp, Belgium
University of Antwerp (UA)	09/2006-06/2009

- Faculty of Science, Middelheimlaan 1, 2020 Antwerp (Belgium)
- Information technology : Programming, theoretical information technology, databases, basics in computer graphics, mathematics, etc.

## General Secondary Education Science–Mathematics

H. Pius-X instituut

- VIIde-Olympiadelaan 25, 2020 Antwerp (Belgium)
- Natural sciences (physics, chemistry, biology, geography), mathematics and an emphasis on languages.

Jyväskylä, Finland 05/2012-05/2016

Antwerp, Belgium 09/2001-06/2006

## Other Education and Training, Qualifications and Skills

#### Supervising PhD candidates (training)

Vrije Universiteit Amsterdam

 The following themes were central in this course: Situational leadership, Communication styles and negotiation. Supervision of planning, Coaching and counseling, Coaching the writing process, Core qualities and cooperation

University Teaching Qualification (UTQ/BKO)	Netherlands
Vrije Universiteit Amsterdam	Finished 11/2022
<ul> <li>Training modules on course design, teaching practice and thesis supervision</li></ul>	n. This is a training
over a longer period of time. I started December 2019, but there was a landuring the pandemic.	ge gap in activity
Data protection basics	Germany
Fraunhofer internal certification	11/2018
– Basics of data protection and privacy (GDPR, BDSG)	

International ScaDS Summer School on Big Data	Leipzig, Germany
Competence Center For Scalable Data Services and Solutions	07/2016

 The topics of the summer school included big data storage, distributed data processing (HPC, map reduce, streaming, Apache Spark, Apache Flink), graph analytics and management, and big data integration.

CSC Summer School – High Performance Computing	Espoo, Finland
Finnish IT Center for Science (CSC)	06/2014-07/2014

 The summer school introduced the participants to the use of high performance computing infrastructure. Topics included were C programming, Message Passing Interface (MPI), OpenMP, Parallel I/O, etc.

Teaching Academic Content trough English (TACE)	Jyväskylä, Finland
University of Jyväskylä	03/2012-03/2013

 This program is aimed at the development of the participants' university pedagogical and intercultural communication competences for using English in the multicultural teaching, counseling, and assessment of multilingual and multicultural student groups.

# International Summer School – Modern Computational Science Oldenburg, Germany University of Oldenburg 08/2012

 The summer school contained a variety of lectures on topics related to computational science. Among others there were lectures on random numbers, complexity theory, optimization, interval methods, evolutionary algorithms, etc.

# Erasmus Exchange to University of Jyväskylä, Finland (JYU)Jyväskylä, FinlandUniversity of Jyväskylä09/2008–06/2009

 I went on an exchange to JYU during my bachelor studies, before starting as a master and doctoral student. The following courses were part of the program: Multi core programming, application protocols, mobile programming, real-time systems, agent based systems, requirements management, etc.

Netherlands 09/2024-11/2024

#### Erasmus Intensive Language Course (EILC): Finnish

University of Jyväskylä/CIMO

Jyväskylä, Finland<br/> 08/2008

- Before my exchange I attended an intensive Finnish language and culture course of one month.

#### First year secondary school

Provinciaal Instituut voor Voeding Antwerpen (PIVA)

Antwerp, Belgium 09/2000-06/2001

- Desguinlei 244, 2018 Antwerp (Belgium)
- Normal secondary school with specialization in food production (bakery, butchery, cooking and waiter techniques)

#### Linguistic Skills

My mother tongue is Dutch. I studied French, English, and German during my secondary school years, and Finnish during my time in Finland. I use Dutch, English and Finnish as everyday communication languages. English is the main language used in my scientific work. I have some experience supervising using the Finnish language as well.

#### Mother tongue: **Dutch**

Other languages (self-assessment March 2025):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
Finnish	C1	B2	B2	B2	B2
French	B1	B1	A2	A2	A2
German	B1	B2	A2	A2	A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user Common European Framework of Reference for Languages<sup>1</sup>

Assistant Professor - Vrije Universiteit Amsterdam	Amsterdam, the Netherlands
Learning and Reasoning https://lr.cs.vu.nl	Since 09/2019

- Permanent staff member
- Research on the intersection of Knowledge Graphs and Machine Learning
- Supervision of PhD., MSc. and BSc. students and projects
- Teaching of courses (Project intelligent systems, Deep Learning, Machine Learning with Graphs)
- Activities to support the working of the department

#### Self employed (part-time)

Graphino https://www.graphino.nl

- Training and consultancy related to graph technology

Abcoude, the Netherlands Since 03/2023

<sup>1</sup>see also http://europass.cedefop.europa.eu/en/documents/european-skills-passport/language-passport

# Previous Work Experience

Postdoctoral researcher (wissenschaftlicher Mitarbeiter) Fraunhofer Institute – FIT, Knowledge Pipelines	Aachen, Germany 07/2016–09/2019
<ul> <li>Research related to linked data and semantic web, prototype based ont and data mining.</li> </ul>	ologies, data pipelines,
<ul> <li>Supervisor of several research and teaching assistants.</li> <li>Project funding acquisition and customer management.</li> </ul>	
Postdoctoral researcher, on partial leave University of Jyväskylä(JYU)	Jyväskylä, Finland 06/2016–05/2020
– Master thesis supervision and teaching of several courses.	
Scientific Advisor, part-time MyOpt consulting	Jyväskylä, Finland 01/2016-01/2018
<ul> <li>Advisor in artificial intelligence and optimizations related domains.</li> </ul>	
Research Visit to the Vienna University of Economics and Busin host: Prof. Axel Polleres	ness Vienna, Austria 08/2018
– During this visit I worked on new directions for question-answer system	ns on graphs.
Postgraduate student, full-time University of Jyväskylä(JYU)	Jyväskylä, Finland 05/2012–05/2016
<ul> <li>Research mainly related to my doctoral studies, but also other areas of and Version control in IT education. Grant and project application wri- several courses and master thesis supervision. (see other sections for de</li> </ul>	Multi-Agent Systems ting. Teaching of tails)
<b>Research Visit to the Insight Centre for Data Analytics</b> <i>host: Prof. Stefan Decker</i>	Galway, Ireland 05/2015–08/2015
– During this visit I worked on several new ideas related to prototype bas	sed ontologies.
<b>Research assistant in Cloud Software Program</b> University of Jyväskylä(JYU) (part- and full-time)	Jyväskylä, Finland 09/2010–04/2012
<ul> <li>Implementation of semantic cloud software based on the UBIWARE pla with Nokia Finland Oy.</li> </ul>	atform in cooperation
<ul> <li>Research on and implementation of data mining algorithms for staff me cooperation with Tieto Finland Oy.</li> </ul>	ember data. In
- Research on cloud communication channels in cooperation with IPSS C	Dy (now Steeri Oy).
Junior researcher in UBIWARE Project (part-time) University of Jyväskylä – Agora Center (JYU)	Jyväskylä, Finland 11/2009–12/2010
<ul> <li>Development and research concerning the UBIWARE semantic agent p package policies.</li> </ul>	latform. Focus on
<b>Student worker at IT service department (school holidays)</b> Plantijn Hogeschool Antwerp (now Artesis Plantijn Hogeschool Antwerp)	Antwerp, Belgium 07/2006–07/2008
<ul> <li>Installing hardware and software, basic helpdesk services, writing manu and implementation.</li> </ul>	als, and website design
Bakery production and sales (when not at school)	Antwerp, Belgium

Cochez-Stevens (parents' bakery)

Antwerp, Belgium 09/2000–08/2008

WU Vienna

#### Parental leaves

I took about 60 working days of parental leave during the period 11/2013-01/2015.

#### **Research Funding and Grants**

## **Major Funding Acquisitions**

These are more significant funding acquisitions in which I was a core applicant.	
Gift from Accenture LLP to the Learning and Reasoning group	180K USD
For our work on complex query answering over medical knowledge graphs	09/2023
<b>NWO Open Access (co-applicant with Ilaria Tiddi)</b> For Automatising the publication of CEUR-WS.org workshop proceedings	50K€ <i>09/2023</i>
Horizon (European Commission), Graph-Massivizer Total 5M $\in$ , ow Massive Graph Processing for a Sustainable Economy, Society, and Environme	$\begin{array}{l} \text{ n share } 660 \text{K} \\ ent  08/2022 \end{array}$
<b>H2020 (European Commission), DEMETER</b> Total 15M€, ow Digitising and transforming European industry and services	n share $250 K$ € 03/2019
<b>4 year funded PhD position</b> University of Jyväskylä 05	5/2012-05-2016
Funding for several cases in the Need4Speed SHOK projectTEKES (Finland)01	/2014-12/2015
Funding for several cases in the Cloud Software SHOK project	
TEKES (Finland) 01	/2010-12/2013

## Minor Research and Conference Travel Funding

Below I listed grants with a value greater than  $1K \in$ . Besides these, I have also obtained a variety of travel grants for conferences during my PhD and was granted funds for invited talks and short research visits.

08/2018

Summer school in Oldenburg, Germany	€1,300
Erasmus (European Commission)	08/2012
Doctoral study grant	€5,000
Nokia Foundation	<i>01/2013</i>
Mobility Grant for Research Visit to DERI/Insight Centre, Galway	€4,500
JYU research council	<i>05/2015</i>
SIGMOD 2015 conference travel and fee	\$1,385
Association for Computing Machinery (ACM)	<i>05/2015</i>
GPU Titan Xp for research	1 GPU
NVIDIA Corporation	<i>06/2017</i>
Grant for research visit to Vienna University of Economics and Business	€1,500

#### **Research Output**

- Peer reviewed book chapters, and conference, and journal papers: 50+
- Peer reviewed workshop papers: 15
- Technical reports, documentation and articles (non-reviewed): 11
- Master thesis and Doctoral dissertation

Ten selected publications<sup>2</sup>

- Aidan Hogan, Eva Blomqvist, Michael Cochez, Claudia D'amato, Gerard De Melo, Claudio Gutierrez, Sabrina Kirrane, José Emilio Labra Gayo, Roberto Navigli, Sebastian Neumaier, and others. Knowledge graphs. ACM Comput. Surv., 54(4), July 2021. ISSN 0360-0300. doi: 10.1145/ 3447772. URL https://arxiv.org/abs/2003.02320
- Hongyu Ren, Mikhail Galkin, Zhaocheng Zhu, Jure Leskovec, and Michael Cochez. Neural Graph Reasoning: A Survey on Complex Logical Query Answering. Transactions on Machine Learning Research, May 2024. ISSN 2835-8856. URL https://openreview.net/forum?id=xG8un9ZbqT
- Michael Cochez and Hao Mou. Twister tries: Approximate hierarchical agglomerative clustering for average distance in linear time. In *Proceedings of the 2015 ACM SIGMOD international conference on Management of data*, SIGMOD '15, New York, NY, USA, 2015. ACM. doi: 10.1145/ 2723372.2751521. URL https://www.cochez.nl/papers/twister\_tries.pdf
- 4. Erik Arakelyan, Daniel Daza, Pasquale Minervini, and Michael Cochez. Complex query answering with neural link predictors. In International Conference on Learning Representations (ICLR 2021). Openreview, 2021. URL https://openreview.net/forum?id=Mos9F9kDwkz. Oral presentation, spotlight paper
- 5. Dimitrios Alivanistos, Max Berrendorf, **Michael Cochez**, and Mikhail Galkin. Query embedding on hyper-relational knowledge graphs. In *International Conference on Learning Representations* (*ICLR 2022*). Openreview, 2022. URL https://openreview.net/forum?id=4rLw09TgRw9
- Daniel Daza, Dimitrios Alivanistos, Payal Mitra, Thom Pijnenburg, Michael Cochez, and Paul Groth. BioBLP: a modular framework for learning on multimodal biomedical knowledge graphs. Journal of Biomedical Semantics, 14(1):20, Dec. 2023. ISSN 2041-1480. doi: 10.1186/ s13326-023-00301-y. URL https://doi.org/10.1186/s13326-023-00301-y
- Michael Cochez, Petar Ristoski, Simone Paolo Ponzetto, and Heiko Paulheim. Global RDF vector space embeddings. In Claudia d'Amato, Miriam Fernandez, and others, editors, *The Semantic Web ISWC 2017: 16th International Semantic Web Conference, Vienna, Austria, October 21-25, 2017, Proceedings, Part I*, pages 190-207. Springer International Publishing, Cham, 2017. ISBN 978-3-319-68288-4. doi: 10.1007/978-3-319-68288-4\_12. URL https://www.cochez.nl/papers/GlobalRDFEmbedding.pdf
- Daniel Daza, Michael Cochez, and Paul Groth. Inductive entity representations from text via link prediction. In *Proceedings of the Web Conference 2021*, page 798–808. Association for Computing Machinery, New York, NY, USA, 2021. ISBN 9781450383127. URL https://arxiv. org/abs/2010.03496

<sup>&</sup>lt;sup>2</sup>complete list from https://scholar.google.com/citations?user=JuZrOtoAAAAJ

- 9. Bo Xiong, Michael Cochez, Mojtaba Nayyeri, and Steffen Staab. Hyperbolic embedding inference for structured multi-label prediction. In Sanmi Koyejo, S. Mohamed, A. Agarwal, Danielle Belgrave, K. Cho, and A. Oh, editors, Advances in Neural Information Processing Systems 35: Annual Conference on Neural Information Processing Systems 2022, NeurIPS 2022, New Orleans, LA, USA, November 28 - December 9, 2022, 2022. URL http://papers.nips.cc/paper\\_files/ paper/2022/hash/d51ab0fc62fe2d777c7569952f518f56-Abstract-Conference.html
- 10. Svitlana Vakulenko, Maarten de Rijke, Michael Cochez, Vadim Savenkov, and Axel Polleres. Measuring semantic coherence of a conversation. In Denny Vrandecic, Kalina Bontcheva, and others, editors, The Semantic Web - ISWC 2018 - 17th International Semantic Web Conference, Monterey, CA, USA, October 8-12, 2018, Proceedings, Part I, volume 11136 of Lecture Notes in Computer Science, pages 634-651. Springer, 2018. URL https://www.cochez.nl/papers/ semantic\_coherence.pdf

#### **Research Supervision and Leadership Experience**

I was elected to council of the Faculty of Information Technology, University of Jyväskylä

1.1.2014–31.12.2017 This council is the highest decision-making body of the faculty and makes decisions about e.g. personnel recruitment, dividing the funding allocated to the Faculty, approving the curricula, and matters concerning doctoral dissertations and licentiate theses.

I have extensive experience supervising BSc, and MSc thesis works. I co-supervised 2 PhD students who already graduated and currently supervise 4 PhD students. I am also the supervisor for 2 postdoctoral researchers.

From its inception in 2020, I am the academic lab manager of the Elsevier discovery lab. I act as the interface between the academic partners and the company; I am responsible for the daily functioning of the lab, which includes finances, reporting, but also the communication with and dissemination within the company.

As a staff member of the Learning and Reasoning group, I take my share in the daily functioning of the research group. This includes group planning, finances, hiring procedures, funding acquisition, delegation and monitoring of tasks to group members, etc.

Thesis supervision

• I supervised or acted as an examiner for more than 30 BSc. and 30 MSc. thesis works. See https://www.cochez.nl/teaching/supervision/ for an overview.

Graduated PhD. student supervision

- Co-advisor of the dissertation of Md. Rezaul Karim at the RWTH Aachen University (joint supervison with prof. Stefan Decker, prof. Dietrich Rebholz-Schuhmann, and prof. Oya Deniz Beyan). Md. Rezaul Karim graduated with summa cum laude (the highest attainable grade) in August 2022.
- Co-promotor of Daniel Daza at the Vrije Universiteit Amsterdam (joint supervison with prof. Paul Groth and prof. Frank van Harmelen ). Daniel Daza graduated with cum laude (the highest attainable grade) in December 2024.

Current PhD. student supervision

• Co-promotor of Dimitrios Alivanistos at the Vrije Universiteit Amsterdam (joint supervison with prof. Frank van Harmelen )

- Co-promotor of Taewoon Kim at the Vrije Universiteit Amsterdam (joint supervison with asst. prof. Vincent François-Lavet, prof. Mark Neerinckx, and prof. Frank van Harmelen)
- Co-promotor of Ruud van Bakel at the Vrije Universiteit Amsterdam (joint supervison with prof. Frank van Harmelen)
- Co-promotor of Yannick Brunink at the Vrije Universiteit Amsterdam (joint supervison with assoc. Jacopo Urbani and prof. Frank van Harmelen)

Current postdoc supervision

- Supervision of Romana Pernish, who is a postdoc working in the Elsevier discovery lab and the KAI research group
- Co-supervision Daniel Daza, who is a postdoc at the Amsterdam University Medical Center and the Knowledge and Reasoning research group (together with Martijn Schut).

#### **Teaching Merits - Pedagogical Competence**

I listed the pedagogical trainings in the section "Other education and training, qualifications and skills" above. Below you will find my activity regarding design of educational programs, teaching, and funding acquisition for teaching activities.

## **Curriculum Planning and Student Selection**

I have participated in curriculum planning and student selection as follows:

- Member of the MSc AI curriculum development committee 2024-2025 at Vrije Universiteit Amsterdam.
- Member of the admission committee MSc. AI at Vrije Universiteit Amsterdam, mandated 02/2023 01/2026.
- Tutor at the Semantic Web Research Summer School in Bertinoro in 2018
- Member of the planning group of the Web Intelligence and Service Engineering (WISE) master program at JYU– 2012-2016.
- Member of WISE selection committee 2013, 2014, 2015, 2016.
- Member of the working groups for curriculum development (2014–2017) in the areas of computation (applied mathematics, data analysis, etc.) and technology (software engineering, mobile systems, sensor networks, games, and gamification) 2013 at JYU.

## Teaching

Except for my years as a postdoc, I have been teaching intensively. I have designed several courses from the ground up and restructured others. I have experience with both more theoretical and practical courses. Moreover, I have also been teaching various group sizes, ranging from 10 people classes up to 350 students. These larger classes also require management of a team of teaching assistants.

#### Vrije Universiteit Amsterdam – Since 2019

Since the academic year 2022-2023 I have been teaching three courses: *Project intelligent systems*, *Deep Learning*, and *Machine learning with Graphs*. I also teach some lectures in Data Mining Techniques. Besides these, I have been active in eduction for professionals. This includes lectures on semantic web technologies in the Business Analytics & Data Science program in 2020, a lecture series on knowledge graphs for Deloitte Amsterdam in 2022, which later transformed into a joint training course with Deloitte for other professionals in 2024 and 2025. I also did one of the lectures for the ICAI MOOC on AI in Practice<sup>3</sup>

- Project Intelligent Systems This is a practical course in which the students implement a bot which plays a card game against other bots. The students have to create an experimental setup, and use this to evaluate the performance. Since 2020-2021, I coordinate this course. (I also taught parts of this in the Project Artificial Intelligence course in 2019-2020)
- Deep Learning A course on deep learning, where I teach on convolutional neural networks and learning with graphs, since 2020-2021. See also https://dlvu.github.io/. Our course material channel on YouTube reaches nearly 6000 subscribers https://www.youtube.com/@dlvu6202.
- Machine Learning with Graphs A course during which student learn about the bleeding edge of research on learning with graphs. As part of the course they will implement and evaluate a technique from a recent paper in the field. I designed this course with Peter Bloem in academic year 2022-2023. In the following years the coordination was done by Xander Wilcke, I am still taking part in the teaching.
- **Data Mining Techniques** In this course I teach only a few lectures on scalable nearest neighbor search and clustering. Since academic year 2019-2020.
- **Intelligent systems** A course during which we teach several basic AI techniques, based on the AI book by Russel and Norvig. I was teaching parts on probability, fuzzy logic, and Markov chains. 2019-2020 (2 instances).
- Introduction to AI The first course in the BSc. AI program at the VU. I was tutoring a group of around 25 students in the 2019 academic year.

#### RWTH Aachen – 2016-2019

My working location during my time at Fraunhofer FIT was at the RWTH Aachen University. I took on a limited number of teaching tasks in this period.

- Seminars i5 RWTH Aachen In these courses students work on a specific topic towards a presentation and report at the end of the course. The goal is to prepare the students for writing their master thesis. I was the main contact person and responsible for review of reports, etc. Summer semester 2017, Winter Semester 2017-2018, and Winter Semester 2018-2019 at RWTH Aachen University.
- **Praktikum i5 RWTH Aachen** I organized a, so called, Praktikum on Knowledge Graphs in Spring 2018. This is a course in which bachelor students perform practical assignments.

Courses in which I had a limited role:

- Linked Data seminar is RWTH Aachen Winter semester 16/17 description above.
- Semantic Web i5 RWTH Aachen 2016 I taught one of the lectures in this course and was involved in grading of the mid-term test.

<sup>&</sup>lt;sup>3</sup>https://www.edx.org/learn/artificial-intelligence/delft-university-of-technology-ai-in-practice-preparing-for-ai

#### University of Jyväskylä – 2013-2017

I taught these courses independently at master level at the university of Jyväskyla. Each course was worth five ECTS credits (135 hours of study):

- Introduction to service oriented architectures (SOA) and cloud computing 2013, 2014, 2015 During this course the student got an introduction to technologies used in SOA and cloud computing settings.
- Service oriented architectures and cloud computing for developers 2013, 2014, 2015, 2016 This course was a follow-up course of the TIES456 course. Students worked individually on more advanced tasks related to the topics from the basic course.
- Service oriented architectures and cloud computing 2012 old form of the two courses above (10 ECTS credits).
- **Big data engineering** in 2014 and 2015 as a normal course, in 2017 as a two week intensive course Multiple topics related to Big Data were be studied. Students will get acquainted to large data sets and streaming. Some storage and processing algorithms were studied and hardware related issues discussed. The gathered knowledge was then applied on real world data sets.
- Agent technologies for developers 2014, 2016 The course is about practical use of distributed AI methods. More concretely of multi-agent technologies, for the development of complex cooperating software systems.
- Design of agent-based systems, Part II 2013 old form of the course above.

## Funding for Teaching

I obtained several grants for computing resources specifically for courses I was tea	ching.
Computing resources grant for courses TIES456 and TIES532	\$5200
Amazon.com, Inc.	<i>09/2013</i>
Computing resources grant for courses TIES456 and TIES532	\$5,600
Amazon.com, Inc.	<i>09/2014</i>
Computing resources grant for courses TIES457	\$2,000
Amazon.com, Inc.	11/2014
Computing resources grant for courses TIES456 and TIES532	\$3000
Amazon.com, Inc.	10/2015

#### Awards and Honors

For the paper with on Complex query answering with neural link predictors, a joint work with Erik Arakelyan, Daniel Daza, and Pasquale Minervini, we received the **spotlight paper recognition at the International Conference on Learning Representations** (ICLR 2021).

For my review work as a senior program committee member at ESWC 2023 I received the **best SPC** award.

For me a it is a great honor to be invited to several Dagstuhl seminars, where I get the opportunity to discuss with great minds in the field on their research. I got invited to the following seminars:

• Knowledge Graphs: The future of the Semantic Web (Sep 2018)

- Trust and Accountability in Knowledge Graph-Based AI for Self Determination (Jan 2025)
- Holistic Graph-Processing Systems: Enabling Real-World Scale and Societal Impact (April 2025)
- Challenges and Opportunities of Table Representation Learning (April-May 2025)

#### Other Academic Merits

I take an active role in my research area and I maintain an international network of collaborators. Through them, I also get invited for a variety of roles.

## PhD Evaluation

I am/was on the evaluation committee for the following PhD candidates:

- *international expert* in the evaluation of the dissertation of dr. Daniel Ayala On Data Engineering and Knowledge Graphs-A holistic, smarter approach to data enrichment. October 2019
- external examiner for Jeffrey Sardina Structural Alignment in Link Prediction. April 2025
- *external examiner* for Mojtaba Nayyeri Pattern Aware Knowledge Graph Embedding. Summer 2025 (est.)
- external examiner for Vaihali Pal Information Seeking over Semi-Structured Tabular Data. Summer 2025 (est.)

## **Recruitment Evaluation**

I was member of the hiring committee for various positions. This is the case for nearly all Phd students and postdocs I have supervised. Besides, most significantly, I was on the hiring committee for four assistant professor positions. One position on Graph Data Modeling and Analytics, one on Software Ecosystems in the Computing Continuum, and two in the area of Bioinformatics.

## **Review of Funding Applications**

I was a reviewer for the following funding applications

- research proposals for DfG (German research foundation) proposal in the area of FAIR data infrastructures August 2020
- proposals for the Network Institute Academy Assistant 2020-2021 call
- funding proposals for the Veni call of the Dutch Research Council in 2023
- funding proposals for the Open Science Fund 2023 call of the Dutch Research Council

# Positions of Trust and Memberships

- Since 2025, I am the vice chair and treasurer of the BNVKI, the Benelux Association for Artificial Intelligence. Before, I was responsible for student affairs (01/2023-12/2024).
- Since July 2022 I am a member of the ELLIS Society, which is a pan-European network of excellence on Machine Learning and Artificial Intelligence.
- I am the representative of the Vrije Universiteit at the Data Science Platform Nederland (DSPN) since 01/2023.
- Since April 2023 I am a member of the Transactions on Graph Data and Knowledge (TGDK) journal Editorial Board.
- I am an editor of CEUR-WS http://ceur-ws.org/, which is a series of workshop proceedings in computer science.

# **Referee for Scientific Publications**

In my research field, most activity takes place in conference papers. Several conferences are considered more prestigious venues for publishing than journals. I am/was a reviewing for the following scientific conferences and journals. Senior PC and area chair roles indicate that my activity was on overseeing the review process on a larger set of papers. Besides these, I have also reviewed for a variety of workshops.

- ICLR 2025 PC
- ICML 2025 PC
- ISWC 2017-2019 PC, 2021-2025 senior PC
- ESWC 2020 (PC Machine Learning Track), 2021 (*track chair machine learning*, reviewer for posters and demo track, PhD symposium), 2022 (PC), 2023 (senior PC winner best SPC award), 2024 senior PC
- ECAI 2020, 2024, 2025 (senior PC)
- AAAI 2020-2025 (Student Abstract and Poster track)
- Transaction on Graph Knowledge and Data (TGDK) journal reviewing 2023-2025
- Neurips 2023, 2024
- Logconference as area chair in 2022, 2023, 2024
- Amsterdam AI thesis award 2023, 2024
- CIKM 2020, 2021, 2022, 2023
- WWW (TheWebConf) (2017 as sub reviewer), 2018 (tracks: Semantics and Knowledge, Web Mining and Content Analysis), 2019 (Semantics and Knowledge, Web Mining and Content Analysis), 2020, 2022 senior PC (Semantics and Knowledge Track), 2023 senior PC (Semantics and Knowledge Track)
- IJCAI 2019, 2020 (external reviewer), 2023
- NWO (Dutch science council) 2022 Talent Programme reviewer
- SEMANTICS 2022 PC member (Research & Innovation Track)
- IJCKG 2021 Senior PC
- Semantic Web Journal (SWJ) 2017, 2018, 2019, 2020
- Neural Networks journal (Elsevier) 2019
- Web Science 2019
- Progress in Artificial Intelligence (Springer) Special issue Applied Cognitive Computing 2018
- Science of Computer Programming Journal (Elsevier), reviewer for Special issue on Systems development by means of semantic technologies
- WIMS 2014, 2015, 2016, 2017, 2018
- ICTERI 2013, 2014, 2015, 2016, 2017

## Talks and Tutorials:

- Talk Knowledge Graph Embedding I gave a talk in which I presented an overview of Knowledge Graph Embedding Techniques at the Vienna University of Business and Economics (August 2018).
- **Talk Knowledge Graph Embedding** As part of the International Semantic Web Research Summer School 2018, I gave a talk in which I presented an short introduction on Knowledge Graph Embedding Techniques.
- **Talk Knowledge Graph Embedding and Graph Convolutional Networks** I gave a talk in which I presented an short introduction on Knowledge Graph Embedding Techniques as part of my visit to the TU Dresden (February 2019)
- **Talk Knowledge Graph Embedding and Graph Convolutional Networks** I gave an invited talk in which I presented an short introduction on Knowledge Graph Embedding Techniques at the seminar of the AIFB group at Karsruhe Institute of Technology (February 2019)
- Talk on learning Universal Representation with knowledge graphs the Amsterdam Data Science even on 8 September 2021 https://www.meetup.com/Amsterdam-Data-Science/events/280010110/
- Invted Lecture Presented on embedding knowledge graphs and queries at the 2022 knowgraphs winter school https://knowgraphs.eu/ws2022/ February 2022.
- **Invited talk** Talk at the INDELab and discovery lab about our work on the Wikidata recommender 19 April 2022
- Invited Talk I was the presenting at the Oberseminar at the University of Stuttgart 07 June 2022
- **Colloquium talk** Talk at the colloquium of the DWS group at the university of Mannheim. 22 November 2022
- Keynote -Learning to Query Graphs: Extracting Plausible Answers the International Workshop on Knowledge Graphs at ICDM 28 November 2022 http://www.kgworkshop.org/2022/
- Tutor and Lecturer at the 5th summer datathon on linguistic linked open data June 2023 https://datathon2023.jezik.hr/.
- Keynote Deep Learning, Knowledge Graphs, and Language at the workshop on Deep Learning, Relation Extraction and Linguistic Data with a Case Study on BATS co-located with the 4th Conference on Language, Data, and Knowledge (LDK). September 2023
- Invited Talk I gave a talk at the Seminar Series of the department of informatics at the University of Zurich, Switzerland. 21 November 2024

## **Organizing Scientific Conferences and Workshops**

- I co-organized the ELLIS workshop on Representation Learning and Generative Models for Structured Data February 2025 in Amsterdam https://sites.google.com/view/rl-and-gm-for-sd/home
- I co-organized the First International Workshop on Scaling Knowledge Graphs for Industry, co-located with 20th International Conference on Semantic Systems (SEMANTICS) Amsterdam, Sept 2024 https://sites.google.com/view/skgi/program

- I co-organized the learning on graphs Amsterdam meetup in both 2023 and 2024 https://logams.github.io/
- I was a co-organizer of the Workshop on Deep Learning for Knowledge Graphs at ESWC 2019, ESWC 2020, ISWC 2021, ISWC 2022, ISWC 2023, KDD 2024
- I co-organized the workshop on Data Quality meets Machine Learning and Knowledge Graphs DQMLKG Workshop at ESWC 2024, May 2024
- I was the proceedings editor for ESWC 2020
- I am a co-chair for reproducibility at ISWC 2019
- I chaired sessions at ESWC (2021 ML and KGs, 2022 ML and KGs) and ISWC 2021
- I was a co-organizer of the GraphKR 2020 workshop @ ECAI
- I assisted in the organization of a Dagstuhl seminar on Knowledge Graphs: The future of the Semantic Web
- I was a co-organizer of the BigNet workshop at the Web Conference 2018.
- I was a co-organizer of the Workshop on Deep Learning for Knowledge Graphs and Semantic Technologies at ESWC 2018.
- I was an ESWC track co-chair (Machine Learning) 2017.
- I chaired a session on Social Network Analysis and Graph Algorithms for the Web at The Web conference 2018, the Applications session at WIMS 2017, and the Symposium on Differential Evolution at IEEE Symposium Series on Computational Intelligence (SSCI) 2015.

#### Scientific and Societal Impact of Research

Almost all my research work has been published open access and due care has been taken to also publish the source code and datasets such that they can be reused by other researchers. My activity on the CEUR-WS board also reflects my commitment to open science; with this organization we publish nearly 100 open access workshop proceedings per year.

The impact of my research is enlarged by collaborating with industry. Through joint projects with industry partners and the university hospital we ensure that academic results are transferred into products and services that have a direct impact on the customers of the company or patients in the hospital. Further impact comes from teaching courses for professionals, who use the advanced training directly in their practice.

#### Other Merits

I co-organized three coding events for young children (4–9 y.o.) in April, May, and November 2014. We mainly focused on getting children to find their way through the hour of code: https://studio.code.org/hoc/.

Starting January 2018 until December 2019 I audited (toiminnan tarkastaja) the working of the Aachenin Suomi-koulu (Aachen Finnish school, keeping educational Finnish language events for expats' children). I was mentor of Maria Angela Pellegrino during her Erasmus placement at Fraunhofer FIT from March 2018 till August 2018

I took part in the following research projects:

- **UBIWARE project 2007-2010** The project's goal was the creation of an innovative middleware supporting complex self-managed industrial systems. The nature of the components managed by the system varies from smart sensors and actuators to web services and humans. A Multi-Agent System was used as a foundation where the beliefs, desires, intentions, and even the communication is performed using S-APL (the Semantic Agent Programming Language).
- Cloud software program SHOK 2010-2013 A program directed towards the creation of new business models, lean software principles, and an open infrastructure for a cloud computing environment.
- Need4Speed SHOK 2014-2015 An environment for experimenting with real-time business models based on customer insight.
- FITScope 2016-2019 The startup project of prof. Stefan Decker at Fraunhofer FIT.
- DiscoveryLab 2020-2025 A joint lab with Elsevier, the Vrije Universiteit Amsterdam and the University of Amsterdam. In this lab we accellerate academic research with artificial intelligence. See also https://www.discoverylab.ai
- **Graph-massivizer** A Horizon project in which we research and develop a high-performance, scalable, and sustainable platform for information processing and reasoning based on the massive graph representation of extreme data.

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