

# Curriculum Vitae of C. Maria Keet

11 February 2025

## Current position

Associate Professor  
Department of Computer Science  
University of Cape Town  
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## Personal Particulars

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## 1 Employment and work experience

- Associate Professor**     *Department of Computer Science, University of Cape Town, South Africa, since 1-'19.*  
Activities: productive research with several award-winning papers, teaching (including course material development and an award-winning textbook), thesis supervision; acquisition and management of four projects; paper and project reviewing; various administrative duties (including Language Policy Committee, faculty research committee, conference organisation).
- Senior Lecturer**     *Department of Computer Science, University of Cape Town, South Africa, 1-'14/31-'18.*  
Activities: productive research with several award-winning papers, teaching (including course material development, programming contest training), thesis supervision to graduation (MSc and PhD); acquisition and management of four projects; paper and project reviewing; various administrative duties (including Language Policy Committee, communications & marketing, workshop organisation).
- Senior Lecturer**     *School of Mathematics, Statistics, and Computer Science, University of KwaZulu-Natal, Durban, South Africa, 1-'11/12-'13.*  
Activities: productive research with an award-winning paper, teaching (including course development) and thesis supervision to graduation (MSc); acquisition and management of two project, reviewing, member of the School's Higher Degrees & Research Committee, and general administrative duties and organisational activities.
- Assistant Professor**     *KRDB Research Centre, Free University of Bozen-Bolzano, Italy, 2-'08/1-'11.*  
Activities: research on logic-based knowledge representation in the scope of the Semantic Web focussed on bio-ontologies, granularity, conceptual modelling; teaching and MSc course development, student supervision, and tutorials at summer schools, exam committee memberships; coordinator KRDB seminars, reviewing, etc.; initiation, coordination and research of the project to realise OBDA for horizontal gene transfer.
- Research Assistant**     *KRDB Research Centre, Free University of Bozen-Bolzano, Italy, 10-'04/12-'04, 5-'05, 3-'06, and 1-'08.*  
Activities: investigation into logic-based knowledge representation in the scope of the Semantic Web, focussed on bio-ontologies.
- Systems Engineer**     *Eurologic Systems, Dublin, Ireland, 6-'00/1-'02.*  
7-'01/1-'02: Systems Integration Test Engineer, R&D department. Activities: Developed and implemented test plans for the integration testing of the 2 Gb Storage solutions (RAID in SAN/NAS), contributed to bug resolution. Contributed to the phase 1 and 2 exits of the iSCSI converter development. Involvement in the customisation, support, and training (at engineering level) for one of the major OEMs.

	6-'00/6-'01: Systems Qualification Engineer. Activities: Developed and implemented qualification test plans for the integration testing of the 1 Gb Fibre Channel storage solutions (firmware and software focussed on the RAID solutions). Contributed to bug resolution by interacting with our Product Development Departments (R&D) and suppliers. Configurations includes SANs, NAS and operating systems NT, Win2k, Red Hat Linux and NetWare. Use of in-house and proprietary analysis & debugging tools and management software.
<b>Enterprise Support Engineer</b>	<i>Compaq Computer Corporation EMEA</i> , Dublin, Ireland, 8-'99/5-'00, in the German Enterprise Team. Activities: Troubleshooted problems and provided solutions for large business environments. Development and maintenance of the intranet-site of Engineering Support and EMEA Enterprise Support, and Minilab manager Enterprise level.
<b>Network Administrator</b>	<i>Brunel IT</i> , Amersfoort, the Netherlands, 11-'98/7-'99. Outsourcing projects: 2-'99/7-'99: Project Employee Network dept./IT Support, Centraal Beheer, the Netherlands. Activities: Co-organized the Electronic Software Distribution project via Tivoli, installation of its test environment and performance analysis. Process development for implementing applications, problem analysis of the Helpdesk. 11-'98/1-'99: OS/2 LANManager, Centraal Beheer, the Netherlands. Activities: Rearranged and structured the file servers and set-up of databases, investigation w.r.t. domain separation.
<b>Project researcher</b>	<i>Centro Internacional de la Papa (CIP)</i> in Lima, Peru, 7-'96/1-'97, in Food science/human physiology. Activities: developed and implemented test protocols for <i>in vitro</i> digestibility of sweet potato, organised lab equipment and chemicals.

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## 2 Education

<b>PhD Computer Science (INF/01)</b>	<i>KRDB Research Centre, Faculty of Computer Science, Free University of Bozen-Bolzano</i> , Italy. Thesis: "A Formal Theory of Granularity". 1-'05/12-'07 and successfully defended in public on 28-4-2008.
<b>Research student</b>	<i>Database and Object Systems Group, School of Computing, Napier University</i> , Edinburgh, Scotland, 10-'03/9-'04. Research focus: development and integration of (bio/eco-) ontologies. Included a visit to the <i>Laboratory of Applied Ontology (LOA-CNR)</i> , Trento, Italy (funded by the LOA); Research focus: the ecological niche, 3-'04/6-'04.
<b>BSc(Hons.) IT and Computing</b>	<i>Department of Mathematics and Computing, Open University UK</i> , 2-'01/12-'03. Graduated with 1st Class distinction. Thesis topic: conceptual modelling (ER and ORM) and design of an applied microbiology relational database.

<b>MA Peace &amp; Development Studies</b>	<i>Department of Government and Society, University of Limerick, Ireland, 9-'02/8-'03. Graduated with a 1st class Honours. Dissertation topic: Terrorism and Game Theory.</i>
<b>MSc Food Science (Microbiology)</b>	<i>Wageningen University and Research centre, the Netherlands, 9-'92/1-'98. Full title of the degree: 'MSc Food Science, free specialisation'. Areas of the three theses: molecular ecology of microorganisms, food microbiology, applied philosophy. Graduated: 1-'98.</i>
<i>Vocational training</i>	
ASE	ASE LAN: Accredited Systems Engineer Local Area Networks (Certified in 1-'00); ASE NT: Accredited Systems Engineer NT, and Accredited Compaq Technician for Desktop & Notebook + Server (Certified in 10-'99), Compaq, Dublin.
ITIL	Foundation Certificate in IT Service Management, Stichting Exin, Utrecht, the Netherlands, 6-'99.
MCSE	Full-time international course Microsoft Certified Systems Engineer at the Computerij Onderwijs B.V., Enschede, the Netherlands, 5-'98/9-'98. Electives: TCP/IP and Exchange Server 5.0. Certified in 9-'98.
Other courses	Fibre Channel, comprehensive introduction to FC, in-depth AL and in-depth fabric, Solution Technology, Dublin, 2-'01; WAN technologies, Compaq, Dublin, 4-'00; Fibre Channel/Clustering Solutions Course, Compaq, Dublin, 3-'00; Unix systems management & concepts, AT Computing, Utrecht, the Netherlands, 7-'99; Unix introduction and administration, AT Computing, Utrecht, the Netherlands, 4-'99.

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### 3 Publications

#### *Journal articles*

1. Fillotrani, P. R., Keet, C.M.. Logics for conceptual data modelling: a review. *Transactions on Graph Data and Knowledge*, 2024, 2(1): 4:1-4:30.
2. Kaffee, L.-A., Biswas, R., Keet, C.M., Vakaj, E. K., de Melo, G. Multilingual Knowledge Graphs and Low-Resource Languages: A Review. *Transactions on Graph Data and Knowledge*, 2023. 1 (1): 10:1-10:19.
3. Raboanary, T., Wang, S., Keet, C.M. Towards the generalisation of the generation of answerable questions from ontologies for education. *International Journal of Metadata, Semantics and Ontologies*, 2023, 16(1):86-103.
4. Mahlaza, Z., Keet, C.M. Surface realisation architecture for low-resourced African languages. *ACM Transactions on Asian and Low-Resource Language Information Processing*, 2023, 22(3):1-26.
5. Braun, G., Fillotrani, P.R., Keet, C.M. A Framework for Interoperability Between Models with Hybrid Tools, *Journal of Intelligent Information Systems*, 2023, 60: 437-462.
6. Keet, C.M., Khan, Z.C. Foundational Ontologies: From Theory to Practice and Back. *Journal of Knowledge Structures and Systems*, 2022, 3(1): 67-71. (invited commentary)
7. Keet, C.M., Grütter, R. Toward a systematic conflict resolution framework for ontologies, *Journal of Biomedical Semantics*, 2021, 12:15.
8. Fillotrani, P.R., Keet, C.M.. Evidence-based lean conceptual data modelling languages. *Journal of Computer Science and Technology*, 2021, 21(2): 93-111.
9. Mahlaza, Z., Keet, C.M.. Formalisation and classification of grammar and template-mediated techniques to model and ontology verbalisation. *International Journal of Metadata, Semantics and Ontologies*, 2020, 14(3): 249-262.

10. Keet, C.M.. The African Wildlife Ontology tutorial ontologies. *Journal of Biomedical Semantics*, 2020, **11**:4.
11. Fillotrani, P.R., Jamieson, S., Keet, C.M.. Connecting knowledge to data through transformations in KnowID: system description. *Künstliche Intelligenz*, 2020, **34**, 373-379.
12. Fillotrani, P.R., Keet, C.M.. KnowID: An architecture for efficient Knowledge-driven Information and Data access. *Data Intelligence*, 2020, **2**(4): 487-512.
13. Keet, C.M., Khumalo, L. Parthood and Part-Whole Relations in Zulu Language and Culture. *Applied Ontology*, 2020, **15**(3): 361-384.
14. Potoniec, J., Wiśniewski, D., Ławrynowicz, A., Keet, C.M.. Dataset of Ontology Competency Questions to SPARQL-OWL Queries Translations. *Data in Brief*, 2020, **29**: 105098.
15. Wiśniewski, D., Potoniec, J., Ławrynowicz, A. Keet, C.M.. Analysis of Ontology Competency Questions and Their Formalisations in SPARQL-OWL. *Journal of Web Semantics*, 2019, **59**: 100534.
16. Mahlaza, Z., Keet, C.M.. A method for measuring verb similarity for two closely related languages with application to Zulu and Xhosa. *South African Computer Journal*, 2019, **31**(2): 34-56.
17. Davies, K., Keet, C.M., Ławrynowicz, A. More Effective Ontology Authoring with Test-Driven Development and the TDDonto2 tool. *International Journal on Artificial Intelligence Tools*, 2019, **28**(7): 1950023.
18. Keet, C.M., Khumalo, L. Grammar rules for the isiZulu complex verb. *Southern African Linguistics and Applied Language Studies*, 2017, **35**(2): 183-200.
19. Keet, C.M., Khumalo, L. Evaluation of the effects of a spellchecker on the intellectualization of isiZulu. *Alternation*, 2017, **24**(2): 75-97.
20. Keet, C.M., Khumalo, L. Toward a knowledge-to-text controlled natural language of isiZulu. *Language Resources and Evaluation*, 2017, **51**:131-157.
21. Khan, Z.C., Keet, C.M.. ROMULUS: a Repository of Ontologies for MULTiple USes populated with foundational ontologies. *Journal on Data Semantics*, 2016, **5**(1):19-36.
22. Khan, Z.C., Keet, C.M.. An empirically-based framework for ontology modularization. *Applied Ontology*, 2015, **10**(3-4):171-195. **IOS Press prize**
23. Keet, C.M., Fillotrani, P.R. An ontology-driven unifying metamodel of UML Class Diagrams, EER, and ORM2. *Data & Knowledge Engineering*, 2015, **98**:30-53.
24. Keet, C.M., Ławrynowicz, A., d'Amato, C., Kalousis, A., Nguyen, P., Palma, R., Stevens, R., Hilario, M. The Data Mining OPTimization ontology. *Web Semantics: Science, Services and Agents on the World Wide Web*, 2015, **32**:43-53.
25. Keet, C.M., Barbour, G. Limitations of Regular Terminology Development practices: the case of the isiZulu Computing Terminology. *Alternation*, 2014, **12**:13-48.
26. Keet, C.M.. Preventing, Detecting, and Revising Flaws in Object Property Expressions. *Journal on Data Semantics*, 2014, **3**(3):189-206.
27. Keet, C.M.. Transforming semi-structured life science diagrams into meaningful domain ontologies with DiDON. *Journal of Biomedical Informatics*, 2012, **45**(3): 482-494.
28. Keet, C.M.. The granular perspective as semantically enriched granulation hierarchy. *International Journal of Granular Computing, Rough Sets and Intelligent Systems*, 2011, **2**(1):51-70.
29. Keet, C.M.. Dependencies between Ontology Design Parameters. *International Journal of Metadata, Semantics and Ontologies*, 2010, **5**(4):265-284.
30. Keet, C.M., Artale, A. Representing and Reasoning over a Taxonomy of Part-Whole Relations. *Applied Ontology*, 2008, **3**(1-2):91-110.
31. Keet, C.M.. Biological Data and Conceptual Modelling Methods. *Journal of Conceptual Modeling*, Issue **29**, October 2003.

## Books

1. Keet, C.M. *The What and How of Modelling Information and Knowledge: From Mind Maps to Ontologies*. Springer, 2023. (ISBN-10: 3031396944; ISBN-13: 978-3031396946)
2. Keet, C.M. *An Introduction to Ontology Engineering*. v1.5, February 2020. 306p.

Keet, C.M. *An Introduction to Ontology Engineering*. v1, July 2018. 270p. (open textbook)  
Keet, C.M. *An Introduction to Ontology Engineering*. College Publications, volume 20, November 2018. 344p.

### **Book chapters**

1. Khan, Z.C., Keet, C.M. Structuring Abstraction to Achieve Ontology Modularisation. *Advanced Concepts, Methods, and Applications in Semantic Computing*. Daramola, O., Moser, T. (eds.). IGI Global, 2021, pp72-92.
2. Khan, Z.C., Keet, C.M. Foundational ontology mediation in ROMULUS. In: *Knowledge Discovery, Knowledge Engineering and Knowledge Management: IC3K 2013 Selected Papers*. Fred, A., Dietz, J.L.G., Liu, K., Filipe, J. (Eds.). Springer Communications in Computer and Information Science CCIS 454, pp. 132-152. 2015.
3. Keet, C.M., Suárez-Figueroa, M.C., Poveda-Villalón, M. Pitfalls in Ontologies and TIPS to Prevent Them. In: *Knowledge Discovery, Knowledge Engineering and Knowledge Management: IC3K 2013 Selected papers*. Fred, A., Dietz, J.L.G., Liu, K., Filipe, J. (Eds.). Springer Communications in Computer and Information Science CCIS 454, pp. 115-131. 2015.
4. Keet, C.M.. Ontology-driven formal conceptual data modeling for biological data analysis. In: *Biological Knowledge Discovery Handbook: Preprocessing, Mining and Postprocessing of Biological Data*, Chapter 6, Mourad Elloumi and Albert Y. Zomaya (Eds.). Wiley. 2013. pp129-154.
5. Keet, C.M.. A top-level categorization of types of granularity. In: *Novel Developments in Granular Computing: Applications for Advanced Human Reasoning and Soft Computation*. JingTao Yao (Ed.). IGI Global. 2010. pp81-117.
6. Artale, A. and Keet, C.M.. Essential, mandatory, and shared parts in conceptual data models. In: *Innovations in Information Systems modeling: Methods and Best Practices*. IGI Global, Advances in Database Research Series, Halpin, T.A., Proper, H.A., Krogstie, J. (Eds.). 2008. pp17-52.

### **Conference and Workshop papers**

1. Sayed, I., Mahlaza, Z., Van der Leek, A., Mopp. J., Keet, C.M. On the usage of semantics, syntax, and morphology for noun classification in isiZulu. *Resources and representations for under-resourced languages and domains (RESOURCEFUL-2025)*, co-located with NoDaLiDa/Baltic-HLT 2025. March 2, 2025, Tallinn, Estonia.
2. Mahlaza, Z., Sayed, I., Van der Leek, A., Keet, C.M.. IsiZulu noun classification based on replicating the ensemble approach for Runyankore. *First Workshop on Language Models for Low-Resource Languages (LoResLM25)* co-located with COLING'25. January 20, 2025, Abu Dhabi. ACL
3. Keet, C.M., Khan, Z.C. On the Roles of Competency Questions in Ontology Engineering. *24th International Conference on Knowledge Engineering and Knowledge Management (EKAW'24)*. Springer LNAI, vol. 15370, pp123-132. Amsterdam, Netherlands, November 26-28, 2024.
4. Burgueño, L., Keet, C.M., Kienzle, J., Michael, J., Babur, Ö. A Human Behavior Exploration Approach Using LLMs for Cyber-Physical Systems. *MDE Intelligence workshop – MODELS Companion '24: Proceedings of the ACM/IEEE 27th International Conference on Model Driven Engineering Languages and Systems*, ACM, pp578 - 586. 22-27 September 2024, Linz, Austria.
5. Mahlaza, Z., Magwenzi, T., Keet, C.M., Khumalo, L. Automatically Generating IsiZulu Words From Indo-Arabic Numerals. *17th International Natural Language Generation Conference (INLG'24)*. Mahamood, S., Le Minh, N., Ippolito, D. (Eds.). ACL. pp 254-271. Tokyo, Japan, September 23-27, 2024.
6. Dawson, W.L. and Keet, C.M.. Ontology Pattern Substitution: Toward their use for domain ontologies. *FOIS'24 Demonstrations*. Enschede, The Netherlands, 15-19 July 2024. CEUR-WS vol 3882. 13p.
7. Arrieta, K., Fillottrani, P. R., Keet, C.M. COSMO: A multilingual modular language for Content Selection Modelling. *The 39th ACM/SIGAPP Symposium On Applied Computing (SAC'24)*. ACM Proceedings, pp706-713. Avila, Spain, 8-12 April 2024.

8. Mahlaza, Z., Raboanary, T., Seakgwa, K., Keet, C.M. ReproHum #0866-04: Another Evaluation of Readers' Reactions to News Headlines. *Proceedings of the Fourth Workshop on Human Evaluation of NLP Systems (HumEval) @ LREC-COLING 2024*. ACL. pp274-280. Torino, Italy. May 21, 2024.
9. Antia, M.-J., Keet, C.M.. Automating the Generation of Competency Questions for Ontologies with AgOCQs. *5th Iberoamerican conference on Knowledge Graphs and Semantic Web (KGSWC'23)*. F. Ortiz-Rodriguez et al. (Eds.). Springer LNCS vol 14382, 213-227. 13-15 Nov 2023, Zaragoza, Spain.
10. Bernabé, C.H., Keet, C.M., Khan, Z.C., Mahlaza, Z. A method to improve alignments between domain and foundational ontologies. *13th International Conference on Formal Ontology in Information Systems 2023 (FOIS'23)*. IOS Press, FAIA vol. 377, 125-139. 18-20 July 2024, Sherbrooke, Canada. **Distinguished Paper Award**
11. Keet, C.M. An analysis of positionalism's roles in use. *13th International Conference on Formal Ontology in Information Systems 2023 (FOIS'23)*. IOS Press, FAIA vol. 377, 77-91. 18-20 July 2024, Sherbrooke, Canada / Sept online.
12. Raboanary, T., Keet, C.M. An Architecture for Generating Questions, Answers, and Feedback from Ontologies. *16th Metadata and Semantics Research Conference (MTSR'22)*, Garoufallou, E., Vlachidis, A. (eds). 7 Nov - 10 Nov. London, UK. Springer CCIS vol. 1789, 135-147.
13. Keet, C.M. Exploring the Ontology of Pandemic. *13th International Conference on Biomedical Ontologies (ICBO'22)*. CEUR-WS. Ann Arbor, MI, USA, September 25-28, 2022. CEUR-WS vol 3805, A.1-10.
14. Emeruem, C., Keet, C.M., Khan, Z.C., Wang, S. BFO Classifier: Aligning domain ontologies to BFO. *FOUST-VI: 6th Workshop on Foundational Ontology, part of JOWO'22*. Prince Sales, T., Hedblom, M. and Tan, H. (Eds). CEUR-WS vol 3249. 15-19 August, Jönköping, Sweden 2022.
15. Gillis-Webber, F., Keet, C.M. A Survey of Multilingual OWL Ontologies in BioPortal. *13th Semantic Web Applications and Tools for Healthcare and Life Sciences Workshop (SWAT4HCLS'22)*. Wols-tencroft, K. et al. (Eds.). CEUR-WS Vol. 3127, 87-96. Leiden, the Netherlands, January 10-13 2022.
16. Raboanary, T., Wang, S., Keet, C.M. Generating Answerable Questions from Ontologies for Educational Exercises. *15th Metadata and Semantics Research Conference (MTSR'21)*. Garoufallou, E., Ovalle-Perandones, M-A., Vlachidis, A (Eds.) 29 Nov - 3 Dec, online. Springer CCIS vol. 1537, 28-40.
17. Keet, C.M. An exploration into cognitive bias in ontologies. *Cognition And OntologieS (CAOS'21), part of JOWO'21*. 13-16 September 2021, Bolzano, Italy. Sanfilippo, E.M. et al. (Eds.). CEUR-WS vol. 2969. 17p.
18. Mahlaza, Z., Keet, C.M. ToCT: A task ontology to manage complex templates. *FOIS 2021 Ontology Showcase, part of JOWO'21*, 13-16 September 2021, Bolzano, Italy. Sanfilippo, E.M. et al. (Eds.). CEUR-WS vol. 2969. 9p.
19. Antia, M-J, Keet, C.M. Assessing and Enhancing Bottom-up CNL Design for Competency Questions for Ontologies. *7th International Workshop on Controlled Natural language (CNL'21)*, 8-9 Sept. 2021, Amsterdam, the Netherlands. ACL, 1.11.
20. Keet, C.M. Natural Language Generation Requirements for Social Robots in Sub-Saharan Africa. *IST-Africa 2021*, IST-Africa 2021 Conference Proceedings. IST-Africa Institute and IIMC Ireland. Cunningham, M. and Cunningham, P. (Eds). 10-14 May 2021, online.
21. Mahlaza, Z., Keet, C.M. OWLSIZ: An isiZulu CNL for structured knowledge validation. *3rd International Workshop on Natural Language Generation from the Semantic Web (WebNLG+)*, ACL, pp15-25. 18 Dec 2020, Dublin, Ireland.
22. Fillotrani, P.R., Keet, C.M. An analysis of commitments in ontology language design. *11th International Conference on Formal Ontology in Information Systems 2020 (FOIS'20)*. Brodaric, B and Fabian Neuhaus, F. (Eds.). IOS Press, FAIA vol. 330, 46-60. September, 2020, Bolzano, Italy.
23. Keet, C.M. The computer program as a functional whole. *11th International Conference on Formal Ontology in Information Systems 2020 (FOIS'20)*. Brodaric, B and Fabian Neuhaus, F. (Eds.). IOS

- Press, FAIA vol. 330, 216-230. September, 2020, Bolzano, Italy.
24. Grütter, R., Keet, C.M. Towards a Framework for Meaning Negotiation and Conflict Resolution in Ontology Authoring. *11th International Conference on Biomedical Ontologies (ICBO'20)*, 16-19 Sept 2020, Bolzano, Italy. CEUR-WS vol. 2807, D.1-12.
  25. Rautenbach, J.G., Keet, C.M. Toward equipping Artificial Moral Agents with multiple ethical theories. *RobOntics: International Workshop on Ontologies for Autonomous Robotics*, co-located with BoSK'20, Bolzano. CEUR-WS vol. 2708, 5 (7 pages).
  26. Mahlaza, Z., Keet, C.M. A classification of grammar-infused templates for ontology and model verbalisation. *13th Metadata and Semantics Research Conference (MTSR'19)*. 28-31 Oct 2019, Rome, Italy. Springer CCIS vol. 1057, 64-76. *Entelect 2019 Best Postgraduate Publication Award, at the computer science department at UCT*
  27. Keet, C.M., Mahlaza, Z., Antia, M.-J. CLaRO: a Controlled Language for Authoring Competency Questions. *13th Metadata and Semantics Research Conference (MTSR'19)*. 28-31 Oct 2019, Rome, Italy. Springer CCIS vol. 1057, 3-15. **Best student paper award**
  28. Fillotrani, P.R., Keet, C.M.. Dimensions Affecting Representation Styles in Ontologies. *1st Iberoamerican conference on Knowledge Graphs and Semantic Web (KGSWC'19)*. Springer CCIS vol. 1029, 186-200. 23-30 June 2019, Villa Clara, Cuba.
  29. Gillis-Webber, F., Tittel, S., Keet, C.M.. A Model for Language Annotations on the Web. *1st Iberoamerican conference on Knowledge Graphs and Semantic Web (KGSWC'19)*. Springer CCIS vol. 1029, 1-16. 23-30 June 2019, Villa Clara, Cuba.
  30. Ma, W., Keet, C.M., Oldford, W., Toman, D., Weddell, G. The Utility of the Abstract Relational Model and Attribute Paths in SQL. *21st International Conference on Knowledge Engineering and Knowledge Management (EKAW'18)*. Springer LNAI, vol. 11313, 195-211. 12-16 Nov. 2018, Nancy, France. **Best paper award**
  31. Khan, ZC, Keet, C.M.. NOMSA: Automated modularisation for abstraction modules. *Proceedings of the EKAW 2018 Posters and Demonstrations Session*. Cimiano, P., Corby, O. CEUR-WS vol. 2262, 13-16. 12-16 Nov. 2018, Nancy, France. (poster paper)
  32. Mahlaza, Z. Keet, C.M.. Measuring verb similarity using binary coefficients with application to isiXhosa and isiZulu. *Annual Conference of the South African Institute of Computer Scientists and Information Technologists (SAICSIT'18)*. ACM Proceedings, 65-71. September 26-28, 2018, Port Elizabeth, South Africa.
  33. Keet, C.M., Khumalo, L. On the ontology of part-whole relations in Zulu language and culture. *10th International Conference on Formal Ontology in Information Systems 2018 (FOIS'18)*. Borgo, S., Hitzler, P. (Eds.). IOS Press, FAIA vol 306, 225-238. 17-21 September, 2018, Cape Town, South Africa.
  34. Gilbert, N., Keet, C.M.. Automating question generation and marking of language learning exercises for isiZulu. *6th International Workshop on Controlled Natural language (CNL'18)*. Davis, B., Keet, C.M., Wyner, A. (Eds.). IOS Press, FAIA vol. 304, 31-40. Co. Kildare, Ireland, 27-28 August 2018.
  35. Byamugisha, J., Keet, C.M., DeRenzi, B. Pluralizing Nouns across Agglutinating Bantu Languages. *27th International Conference on Computational Linguistics (COLING'18)*. ACL, 2633-2643. August 20-26, 2018, Santa Fe, New Mexico, USA.
  36. Keet, C.M., Kutz, O. Orchestrating a Network of Mereo(topo)logical Theories: An Abridged Report. *International Joint Conference on Artificial Intelligence (IJCAI'18)*. ACM, 5289-5293. 13-19 July 2018, Stockholm, Sweden
  37. Mjaria, F., Keet, C.M. A statistical approach to error correction for isiZulu spellcheckers. *IST-Africa 2018*, P. Cunningham, M. Cunningham (Eds). IIMC International Information Management Corporation, pp1-9. 9-11 May, Botswana.
  38. Keet, C.M., Kutz, O. Orchestrating a Network of Mereo(topo)logical Theories. *Proceedings of the Ninth International Conference on Knowledge Capture (KCAP'17)*, Austin, Texas, USA, December 4-6, 2017. ACM, 11:1-11:8. **Best paper award**
  39. Keet, C.M. Natural language template selection for temporal constraints. *CREOL: Contextual Rep-*



- resentation of Events and Objects in Language, *Joint Ontology Workshops 2017*, 21-23 September 2017, Bolzano, Italy. CEUR-WS Vol. 2050. 12p.
40. Keet, C.M. A note on the compatibility of part-whole relations with foundational ontologies. *FOUST-II: 2nd Workshop on Foundational Ontology, Joint Ontology Workshops 2017*, 21-23 September 2017, Bolzano, Italy. CEUR-WS Vol. 2050, 10p.
  41. Khan, Z.C., Keet, C.M.. Automatically changing modules in modular ontology development and management. *Annual Conference of the South African Institute of Computer Scientists and Information Technologists (SAICSIT'17)*. ACM Proceedings, 19:1-19:10. 26-28 September, 2017. Bloemfontein, South Africa.
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2. Keet, C.M. In-house Developed Tools for Ontology Engineering Education (Demo). *Proceedings of the Joint Ontology Workshops 2023 Episode IX: The Quebec Summer of Ontology – FOIS'23 Demonstrations*. Toyoshima, F., Katsumi, M. and Sanfilippo, E. (Eds.), CEUR-WS Vol. 3637, paper 51. July 17-20, 2023, Sherbrooke, Canada.
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5. Zwane, N., Silubonde, S., Keet, C.M. VocabLift: Computer-based word games to learn vocabulary of multiple languages. *6th Workshop on African Language Technology (AfLaT'14)*, 27-28 Nov, 2014, Cape Town, South Africa. (software demo)
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### **Selected Technical Reports**

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4. Keet, C.M.. *An assessment of orthographic similarity measures for several African languages*. Technical Report, Arxiv.org, <http://arxiv.org/abs/1608.03065>. Aug 10, 2016. 9p.
5. Fillottrani, P.R., Keet, C.M.. *KF metamodel formalization*. Technical Report, Arxiv.org <http://arxiv.org/abs/1412.6545>. Dec 19, 2014. 26p.
6. R. Alberts, D. Calvanese, G. De Giacomo, A. Gerber, M. Horridge, A. Kaplunova, C.M. Keet, D. Lembo, M. Lenzerini, M. Milicic, R. Moeller, M. Rodriguez-Muro, R. Rosati, U. Sattler, B. Suntisrivaraporn, G. Stefanoni, A.-Y. Turhan, S. Wandelt, M. Wessel. *Analysis of Test Results on Usage Scenarios*. Deliverable TONES-D27 v1.0, Oct. 10 2008.
7. Keet, C.M.. *Mapping the Object-Role Modeling language ORM2 into Description Logic language  $\mathcal{DLR}_{ifd}$* . KRDB Research Centre Technical Report KRDB07-2, Free University of Bozen-Bolzano, 15-2-2006. <http://arxiv.org/abs/cs.LO/0702089v2>. 21p.
8. Jarrar, M., Keet, C.M., Dongilli, P. *Multilingual verbalization of ORM conceptual models and axiomatized ontologies*. STARLab Technical Report, Vrije Universiteit Brussel. February 2006.
9. Keet, C.M.. *Aspects of Ontology Integration*. Technical Report, Napier University, Edinburgh, Scotland. 2004.

### **Editing**

1. Keet, C.M., Lee, H.-Y., Zariëß, S. (Eds.). *Proceedings of the 16th International Natural Language Generation Conference, INLG 2023*. Association for Computational Linguistics. <https://aclanthology.org/volumes/2023.inlg-main/>.
2. Fonseca, C. M., Borbinha, J., Guizzardi, G., Aveiro, D., Liaskos, S., Keet, C.M., Serral, E., Baidiao, F., Araújo, J., Prince Sales, T., Mira da Silva, M., de Cesare, S., Pinto, H. S., Bellatreche, L., Hacks, S. (Eds.). Companion Proceedings of the 42nd International Conference on Conceptual Modeling: ER Forum, 7th SCME, Project Exhibitions, Posters and Demos, and Doctoral Consortium (ER-Companion 2023), CEUR-WS Vol-3618. Lisbon, Portugal, November 06-09, 2023.
3. Sattler, U., Hogan, A., Keet, C.M., Presutti, V., Almeida, J.P.A., Takeda, H. Monnin, P., Pirrò, G., d'Amato, C. (Eds.). *The Semantic Web ISWC 2022 – 21st International Semantic Web Conference, October 23-27, 2022, Proceedings*. Springer LNCS vol. 13489.
4. Keet, C.M., Dumontier, M. (Eds.): Knowledge Engineering and Knowledge Management – 22nd International Conference, EKAW 2020, Bolzano, Italy, September 16-20, 2020, Proceedings. Springer LNAI vol. 12387.
5. Suárez-Figueroa, M.C., Cheng, G., Gentile, A.L., Guéret, C., Keet, M., Bernstein, A. (eds.). *ISWC 2019 Satellites*. CEUR-WS vol 2456. 342p. Auckland, New Zealand, October 26-30, 2019.
6. Davis, B., Keet, C.M., Wyner, A. (Eds.). *Proceedings of the Sixth International Workshop on Controlled Natural Language 2018*. IOS Press, FAIA vol. 304. Maynooth, Co. Kildare, Ireland, August 27-28, 2018.
7. Keet, C.M., Tamma, V. (Eds.). *Proceedings of the 11th International Workshop on OWL: Experiences and Directions (OWLED 2014)*. Riva del Garda, Italy, Oct 17-18, 2014. CEUR-WS vol. 1265.
8. Britz, A., Calvanese, D., Keet, C.M., Klarman, S. (Eds.). *Proceedings of the First International Workshop on Logics and Reasoning for Conceptual Modeling (LRCM'13)*. Co-located with LPAR-19. December 14, 2013, Stellenbosch, South Africa.
9. Keet, C.M.. (Ed.). 2011. *The nonviolent personality*. Edited and translated from the Italian la

personalità nonviolenta written by Giuliano Pontara.

10. Keet, C.M., Franconi, E. (Eds.). *CSBio reader: extended abstracts of the 'CS&IT with/for biology' Seminar Series*. Free University of Bozen-Bolzano, 2005.

### Reviews

1. Keet, C.M.. 2012. Book review of "Artificial Intelligence: The Basics" by Kevin Warwick. *International Studies in the Philosophy of Science*, **26**(3): 351-354.
2. Keet, C.M.. 2008. Book review of "The changing dynamic of Cuban Civil Society" by Gray and Kapcia. *Latin American Politics and Society*, **50**(4): 189-192.

### Selected symposia, seminar & working papers and conference/workshop abstracts

1. Keet, C.M., Khumalo, L. Mahlaza, Z. Considerations for a model for NCB noun classes in Wikidata. *WikiWorkshop 2022*, April 25, 2022, online. (abstract)
2. Keet, C.M. Augmenting CS1 courses with a semester-long contest. *CLI Symposium 2016*, Phuket, Thailand, collocated with the ACM ICPC World Finals, May 14-20, 2016.
3. Fillotrani, P.R., Keet, C.M. A Design for Coordinated and Logics-mediated Conceptual Modelling. *29th International Workshop on Description Logics (DL'16)*. Peñalosa, R. and Lenzerini, M. (Eds.). CEUR-WS Vol. 1577. April 22-25, Cape Town, South Africa. (abstract, with full presentation)
4. Buthelezi, T., Keet, C.M. Isihloko: Izindlela ezimkhakhamningi neziqhakambisa umphakathi ekwakhweni kwamagama esiZulu semfundo emkhakheni weSayensi YeKhompyutha neminye encike kuwo. *18th Annual African Language Teachers Association (ALTA) Conference*, April 24-27, 2014, Chicago, USA. (abstract, with full presentation)
5. Keet, C.M., Barbour, G.D. Toward self-sustaining community-driven online terminology development. *7th Annual Teaching & Learning Higher Education Conference 2013*, Pinetown, South Africa, September 25-27, 2013. (abstract, with full presentation)
6. Keet, C.M. Basic modelling choices to add roughness to granular levels. *First International Workshop on Rough Sets Theory (RST09)*. 25-27 May 2009, Milan, Italy. (abstract, with full presentation)
7. Keet, C.M. Games tegen terrorisme en voor conflictoplossing. *Vredesterts*, April 2009, issue 49.
8. Keet, C.M. Current characteristics and historical perspective of Computer Science and IT with/for biology. *CSBio Reader: extended abstracts of the 'CS&IT with/for biology' Seminar Series*, Free University of Bozen-Bolzano, 2005, 1-8.
9. Keet, C.M. *Towards a resolution of terrorism using game theory - coalitions, negotiations and audience costs*. Dept of Politics and Public Admin Working Papers, University of Limerick. Number **1**, December 2003. 29p.

### Theses

1. Keet, C.M. *A Formal Theory of Granularity*. PhD Thesis, KRDB Research Centre, Faculty of Computer Science, Free University of Bozen-Bolzano, Italy. 2008.
2. Keet, C.M. *Bacteria and bacteriocins in the food industry - modelled and documented in a relational database*. BSc (hons) thesis, Department of Computing, Faculty of Mathematics and Computing, Open University UK. 2004.
3. Keet, C.M. *Terrorism and Game Theory - coalitions, negotiations and audience costs*. MA Thesis, Department of Government and Society, University of Limerick, Ireland. 2003.
4. Keet, C.M. *Effect of maize rhizosphere on degradation of 3-chlorobenzoate by Pseudomonas B13 or Alcaligenes L6*. MSc Thesis, Department of Microbiology (Molecular Ecology Group), Wageningen University and Research Centre, the Netherlands. 1998.
5. Keet, C.M. Acceptance of genetically modified microorganism on the basis of different points of view of life [*Akseptatie van genetisch gemodificeerde mikro-organismen op basis van verschillende levensbeschouwingen*]. MSc Thesis, Department of Applied Philosophy, Wageningen University and Research Centre, the Netherlands. 1997.
6. Keet, C.M. *Microbial cyanide assimilation on behalf of detoxification of cyanogen glycosides* [Mikro-



biële cyanide-assimilatie t.b.v. ontgifting van cyanogene glykosiden]. MSc Thesis, Department of Food Science (Section Food Microbiology), Wageningen University and Research Centre, the Netherlands. 1996.

## Software

1. *BFO Classifier* to align a domain ontology to the BFO top-level ontology. Details are described in the FOIS'23 paper (ref. 10); online: <https://github.com/mkeet/BFO2DecisionDiagram>.
2. *CLaRO tool* for authoring competency questions. Details are described in the MTSR'19 paper (ref. 27); online: <https://github.com/mkeet/CLaRO>.
3. *TDDOnto* and *TDDOnto2*: test-driven development of ontologies. Theoretical details and performance: ESWC'16 (ref. 55), DL'16 (ref. 54); technical details: IJAIT journal article (ref. 17) and ESWC'17 demo paper (ref. 3). Online: <https://github.com/kierendavies/tddonto2> (TDDOnto2) and <https://semantic.cs.put.poznan.pl/wiki/aristoteles/doku.php> (TDDOnto).
4. *IsiZulu natural language generation/controlled natural language tools*. Theoretical details: see the CNL'14 (ref. 73), RuleML'14 (ref. 71), CICLing'16 (ref. 57), and INLG'16 (ref. 49) conference papers and LRE journal paper (ref. 20). Technical details: ESWC'17 demo paper (ref. 4). Online: <http://www.meteck.org/files/geni/>.
5. *IsiZulu spellchecker*. Theoretical details: see the IST-Africa 2016 and 2018 papers (refs. 56 and 37). Online: [https://people.cs.uct.ac.za/~mkeet/files/Spellchecker\\_final2.zip](https://people.cs.uct.ac.za/~mkeet/files/Spellchecker_final2.zip).
6. *ROMULUS: Repository of Ontologies for MULTiple USes*; with Zubeida Khan, 2013. For details, see our MEDI'13 paper (ref. 77), KEOD'13 paper (ref. 80), and KCAP'13 poster/demo (ref. 7). Online: <http://www.thezfiles.co.za/ROMULUS/>.
7. *ONSET: foundational ONtology Selection and Explanation Tool*; with Zubeida Khan, 2011/2012. See our EKAW'12 paper for details (ref. 84). Online: <http://www.meteck.org/files/onset/>.
8. *ONTOPARTS: Ontology-inspired Part-whole Selection*; with Francis Fernández-Reyes and Annette Morales-González. See our ESWC'12 paper (ref. 85) and demo description (ref. 9) for details. Online: <http://www.meteck.org/files/ontopartssup/supindex.html>. Followed-up with ONTOPARTS-2 in the FORZA method and integrated in MoKi; see our CIKM'13 paper (ref. 75) for details.
9. *WONDER: Web ONtology mediateD Extraction of Relational data*; with Diego Calvanese, Werner Nutt, Mariano Rodríguez-Muro, and Giorgio Stefanoni. See our ACM SAC'10 paper for details (ref. 95). Online: <http://wonder.inf.unibz.it/WONDER/>.

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## 4 Teaching

### Courses

- *Ontology engineering*, at various levels and universities:
  - Ontology engineering (CSC5028Z), MSc in CS course at UCT, 2019-2021, 2023-present, ± 5-10 students.
  - Ontology engineering, 4th year BSc in CS honours module at UCT, 2014-2017, ± 20-30 students.
  - Foundations and recent trends on ontology engineering, Erasmus Mundus Master's Programme in Information Technologies for Business Intelligence (IT4BI)/Erasmus Mundus Joint Master Degree Programme in Big Data Management and Analytics (BDMA). Universitat Politècnica de Catalunya, Barcelona, Spain. 2017. 1 ECTS
  - Ontologies and Knowledge Bases (COMP720 [formerly COMP718]), 2011-2013, 4th year BSc in CS honours course, 16 credits, UKZN ±15 students

- Introduction to ontology engineering, with emphasis on Semantic Web Technologies; part of the Masters Ontology Winter School 2010, 16-30 July, Meraka Institute, South Africa; 15+7 hours lectures and labs.
- Introduction to Ontology Engineering: Foundations and applications, 5-15 July 2010, Universidad de las Ciencias Informáticas, Cuba; 20+10 hours lectures and labs.
- Comprehensive introduction to ontology engineering, 5-16 April 2010, MSc-level, Universidad de la Habana, Cuba; 20+10 hours lectures and labs.
- Semantic Web Technologies, part 2; 2009/2010, MSc-level (part of the European Masters in Computational Logic), 4 ECTS, FUB.
- *Networks* (CSC5010Z), MSc in IT conversion masters, UCT, 2014-2017, 2023-present; ± 15 students.
- *Research methods* (CSC5017Z), MSc in IT conversion masters at UCT, 2024; ± 15 students.
- *Big Data* (CSC4023Z), 4th year BSc in CS honours course at UCT, 2024; ± 75 students.
- *Research methods* (part of CSC4019Z), 4th year BSc in CS honours course at UCT, 2019, 2024; ± 60-75 students.
- *Theory of Computation* (part of CSC3003S), 3rd-year students, semester 2, 2021, 2023-present; 200–300 students.
- *Social Issues and Professional Practice (Ethics)* (part of CSC1016S), 1st-year students, semester 2, 2016-2021, 2023; 500 – 800 students.
- *Social Issues and Professional Practice (Ethics)* (CSC5014Z), MSc in IT conversion masters, UCT, 2018-2021; ± 10-15 students.
- *Database Systems* (CSC5013Z), MSc in IT conversion masters, UCT, 2021; ± 10-15 students.
- *Compilers I* (CSC4021Z), 4th year BSc in CS honours module at UCT, 2019-2020; ± 60-70 students.
- *Networks part 2* (part of CSC3002F), 3rd year BSc in CS module at UCT, semester 1, 2023; ±250 students.
- *Networks* (part of CSC3002F), 3rd year BSc in CS module at UCT, semester 1, 2014-2017; ±100 students.
- *Database Systems* (COMP306), 2012-2013, 3rd year BSc module, 16 credits, UKZN; ±30 students
- *Computing for Natural Scientists* (COMP106), UKZN, 2013. ±200 students
- *Theory of Computation* (COMP314), 2011-2012, 3rd year BSc core module, 16 credits, UKZN; ±70 students
- *Logic*, 2007/2008, BSc-level, 4 ECTS, FUB, as Teaching Assistant, labs and midterm.

#### **Tutorials and short lecture series (UCT and elsewhere)**

- *Principles and methods for good ontologies*. International School on Applied Ontology (ISAO'23), Sherbrooke, Canada, 10-14 July 2023.
- *Foundations of ontology-based data access*. International School on Applied Ontology (ISAO'23), Sherbrooke, Canada, 10-14 July 2023.
- *Generating text from ontologies in multiple languages*. JOWO 2022 tutorial, Jönköping, Sweden, 15-19 August 2022.
- *Research statistics*, part of the Postgraduate Research Methods course, Department of Computer Science, UCT; 2015-2017, 2019-2021, 2023-present.
- *Coach programming contests*. Training ICPC World Finals' UCT teams and aspiring finalists for the ICPC Southern Africa regionals, UCT; 2014-2017, 2019-present.
- *Semantics and conceptual data modelling*. International School on Applied Ontology (ISAO'18), Cape Town, 10-15 September, 2018.
- *NLP for African (Nguni) languages*. Guest lecture 3rd year BSc in CS NLP course, Poznań University of Technology, Poznań, Poland, 10 April 2018.
- *Representing and reasoning over relationships in ontologies*. Forum on AI Research (FAIR'14), Stellenbosch, South Africa, 3-5 December, 2015.
- *Introduction to technical writing*. Tutorial at the Honours students Research Methods Seminar, Uni-

versity of KwaZulu-Natal, Durban, South Africa, d.d. 6 June 2012.

- *Top-down Ontology Development*. Guest Lecture of the Ontology and Knowledge Based Systems fourth year (honours) course, University of KwaZulu-Natal, Durban, South Africa, d.d. 17-18 August 2010.
- *Representing and reasoning over a taxonomy of part-whole relations*. Mini Ontology Winter School (MOWS 2008), Knowledge System Group, Meraka Institute, 1-11 July 2008, Pretoria, South Africa.
- *Semantic Web for the Life Sciences*. Tutorial d.d. 23-5-2007 as part of the course 'Semantic Web Technologies' (course code: 70175, MSc-level), Free University of Bozen-Bolzano, Italy.
- *Introduction to part-whole relations: mereology, conceptual modelling and mathematical aspects*. Tutorial given on 23-10-2006 at the KRDB Research Centre, Free University of Bozen-Bolzano, Italy.

### **Postgraduate student supervision**

Current postgraduate students:

- Mary-Jane Antia (PhD Student; supervisor; 2019-)
- Toky Raboanary (PhD Student; supervisor; 2019-)
- Tadiwa Magwenzi (MSc student; supervisor; 2024-)
- Phuthang Makhupane (MSc student; supervisor; 2023-)
- Leighton Dawson (MSc student; supervisor; 2020-)
- Crystal Yang (M. IT student; supervisor; 2022-)

Graduated postgraduate students:

- Zola Mahlaza (PhD (CS); 2018-2022)
- Joan Byamugisha (PhD (CS); 2015-2019)
- Yamiko Msosa (PhD (CS); 2014-2018)
- Zubeida Khan (PhD (CS); 2014-2017)
- Sindiso Nleya (PhD (CS); 2014-2016)
- Zola Mahlaza (MSc (CS), 2016-2017)
- Trésor Mvumbi (MSc (CS); 2014-2016)
- Nasubo Ongoma (MSc (CS), 2013-2014); cum laude
- Zubeida Khan (MSc (CS); 2012-2013); cum laude
- Jacques de Lange (M. IT; 2021-2024)
- Kyle Seakgwa (M. IT student; 2021-2024); distinction in the dissertation
- Cameron Kyle (M. IT; 2017-2018)
- Tamindran Shunmugam (M. IT; 2014-2016)

Graduated BSc/BSc honours project students:

- Matthew Craig (2024), Jordy Kafwe (2024), Stephan Maree (2024), Imaan Salie (2024), Imaan Sayed (2024), Richard Taylor (2024), Zahraa Hoosen (2023), Tadiwa Magwenzi (2023), Muhammad Has-siem (2023), Nervesh Naidoo (2023), Chiranjeev Nathoo (2023), Ana Dauane (2021), James Kriel (2021), Junior Moraba (2021), Amy Solomons (2021), Kouthar Dollie (2020), Carryn Joseph (2020), Alec Badenhorst (2020), Umar Khan (2020), Mandisa Baleni (2020), Bradley Malgas (2020), Alka Baijnath (2019), Jordy Chetty (2019), Micara Marajh (2019), Kyle Robbertze (2019), Steve Wang (2019), Nthabiseng Mashiane (2017), Frida Mjaria (2017), Siseko Neti (2017), Soham Singh (2017), Nikhil Gilbert (2017), Kgotso Nkosi (2017), Kieren Davies (2016), Ameerah Allie (2016), Lauren Sanby (2015), Ion Todd (2015), Victor Kabine (2015), Dylan Henderson (2015), Luqmaan Salie (2015), Ngonidzashé Choga (2015), Alex Hall (2014), Matthew Welham (2014), Asive Dlaba (2013), Siyabonga Madlala (2013), Zubeida Khan (2011), Giorgio Stefanoni (2009).

Co-authored publications resulting from BSc/BSc(Hons)/MSc student projects and dissertations: Paper nos. 1, 2, 1, 6, 14, 16, 34, 17, 3, 51, 56, 70, 84, 80, 77, 7, 95, 97.

### **Examinations**

- External Examiner (PhD thesis), Universidad Nacional Del Sur, Bahía Blanca, Argentina, 2019.
- External Examiner (MSc thesis), Macquarie University, Sydney, Australia. 2019.

- External Examiner (MSc thesis), Tshwane University of Technology, South Africa. 2013.
- External Examiner (MSc thesis), LBD EPFL, Switzerland. 2007.
- Internal Examiner (MSc thesis), University of Cape Town, South Africa, 2014, 2024.
- Member FUB CS PhD Committee (Collegio di Docenti), 7-'08/12-'10.
- Member FUB Examination Commission of the BSc and MSc degrees in Computer Science, 2008/2009.
- Reviewer CS Honours projects, UKZN (2011-2013).
- Second Reader CS Honours projects, Masters theses, PhD proposals UCT (2014-).

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## 5 Awards

- Distinguished Paper Award at the 13th International Conference on Formal Ontology in Information Systems 2023 (FOIS'23) for the paper entitled "A method to improve alignments between domain and foundational ontologies", co-authored with César Bernabé, Zubeida Khan and Zola Mahlaza.
- 2021 UCT Open Textbook Award, for the textbook "An Introduction to Ontology Engineering".
- Best Student Paper Award at the 13th Metadata and Semantics Research Conference (MTSR'19) for the paper entitled "CLaRO: a Controlled Language for Authoring Competency Questions", co-authored with Zola Mahlaza and Mary-Jane Antia (the student authors).
- Best Paper Award at the 21st International Conference Knowledge Engineering and Knowledge management (EKAW'18) for the paper entitled "The Utility of the Abstract Relational Model and Attribute Paths in SQL", with Weicong (Vivi) Ma, Wayne Oldford, David Toman, and Grant Weddell.
- Best Paper Award at the 9th International Conference on Knowledge Capture (K-CAP'17) for the paper entitled "Orchestrating a Network of Mereo(topo)logical Theories", with Oliver Kutz.
- First Prize "Verifiability, Reproducibility and Working Description Award" at the 17th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing'16) for the code and datasets of the paper entitled "Pluralising Nouns in isiZulu and Related Languages", with Langa Khumalo and Joan Byamugisha.
- IOS Press Prize for the paper in the 10th anniversary special issue of Applied Ontology, entitled "An empirically-based framework for ontology modularization", with Zubeida Khan.
- Best Research Paper Award at the 18th International Conference on Knowledge Engineering and Knowledge Management (EKAW'12) for the paper entitled "Detecting and Revising Flaws in OWL Object Property Expressions".
- First paper award, Agropecuaria Conference (Interjoven 2004), San Jose de las Lajas, Cuba, June 2004.
- Best Society Award from the University of Limerick for the Irish Peace Society (when I held the position of chairperson), 2003.
- National Merit Award from School and University Internet Awards (SUIA) for the Irish Peace Society's website [www.peace.ie](http://www.peace.ie) (when I held the position of Webmaster), 2003.

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## 6 Funded projects

- Principal Investigator of the project entitled *KeBoNa: Knowledge-driven bootstrapping of computational language resources for Niger-Congo B languages*, funded by the National Research Foundation under the Competitive Programme for Rated Researchers (CPRR). Project duration: 2024-2026 (3 years)
- Participant in Staff Exchanges in the project entitled *STormwAteR and WastewAteR networkS heterogeneous data AI-driven management (STARWARS)*, funded under European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie Actions, Staff Exchanges

(MSCA-SE). 2023-2026.

- Partner lab in the *ReproHum Project, Investigating Reproducibility of Human Evaluations in NLP*, led by Anya Belz as Principal Investigator (ADAPT Research Centre, Dublin City University; University of Aberdeen). Funded by EPSRC UK. 2022-2024
- Expert in *ALMA – Modeling of Knowledge Networks in Medieval Romance Speaking Europe Based on Linguistic Data*, led by the Heidelberg Academy of Sciences and Humanities, funded by the German Akademienprogramm. Aug 2022 - 2025.
- Principal Investigator of the project entitled *MoRe NL: foundations of a Modular Realisation Engine for Nguni Languages*, funded by the National Research Foundation under the Competitive Programme for Rated Researchers (CPRR). Project duration: 2020-2022 (3 years)
- Erasmus+ funding with Poznan University of Technology (2020-2021)
- Principal Investigator of the project entitled *Quest: Querying Smart Text*, funded by SADIaR. Project duration: 2019-2020 (6 months).
- Project leader of a grant to improve on the “An introduction to Ontology Engineering” textbook, funded by the *Digital Open Textbooks for Development* project at UCT. Project duration: 2019-2020 (1 year + 0.5 year).
- Co-Investigator of the project *Medical Machine Translation*, in collaboration with the University of Edinburgh (with Dr. Kenneth Heafield, Dr. Lexi Birch), UK, funded by the EPSRC, UK. Project duration: 2017-2018 (7 months)
- Principal Investigator of the project entitled *A Grammar engine for Nguni natural language interfaces (GeNi)*, funded by the NRF under the Competitive Programme for Rated Researchers (CPRR) – Y-rated development grant. Project duration: 2015-2017 (3 years).
- Principal Investigator of the project entitled *Foundations for Nguni natural language generation systems*, UCT Science Faculty Launching Grant. Project duration: 2014-2017 (3 years).
- External collaborator in the project entitled *ARISTOTELES: Methodology and algorithms for automatic revision of ontologies in task based scenarios*, funded by the Polish National Science Center under the SONATA program, with PI Dr. Agnieszka Ławrynowicz, Poznan University of Technology, Poland. 2015-2018.
- Project leader of the ‘Teaching with Technology’ Centre for Innovation in Learning and Teaching (CILT)-funded project on the development of a software-based audience response system. Project duration: 2015 (1 year).
- Project leader of the ‘Open Educational Resources’ Centre for Innovation in Learning and Teaching (CILT)-funded project on the development of a Semantic Wiki for ontology engineering. Project duration: 2015 (1 year).
- Principal Investigator on *COMMUTERM: Self-sustaining community-driven online terminology development*, funded by the University of KwaZulu-Natal’s University Language Board. Project duration: 2013-2014 (1 year).

- Principal Investigator on the South African side of the DST/MINCYT-funded bi-lateral South Africa/ Argentina Joint Science and Technology Research cooperation project with Argentina, entitled *Ontology-driven unification of conceptual data modelling languages*, with Prof. Pablo Fillottrani at Universidad Nacional del Sur, Bahía Blanca, as Argentinian PI. Project duration: 2012-2015 (3 years).
- Participation (external expert, as ontologist) in the EU PF7 collaborative project *e-LICO: An e-Laboratory for Interdisciplinary Collaborative Research in Data Mining and Data-Intensive Science*. Project duration: 2009-2012.
- Participation (researcher) in the Marie Curie action funded by the EC under ICT Call 3 FP7-PEOPLE-2009-IRSES on a *Network for Enabling Networked Knowledge (NET2)*. Project duration: 2010-2012.
- Participation (researcher) in the Italy - South Africa collaboration project *Technologies for Conceptual Modelling and Intelligent Query Formulation*, within the Executive Programme of Scientific and Technological Co-Operation between the Italian Republic and Republic of South Africa 2008-2010; Coordinators Prof. Enrico Franconi (Italy) and Dr. Thomas Meyer (South Africa). Project duration: 2008-2010.
- Participation (tester and report writing) in the *EU FP6 FET TONES Project* on Ontology-Based Data Access for databases in the subject domain of people with disabilities and of horizontal gene transfer. Project duration: 2006-2008.

### **Visiting researcher**

- University of Montpellier and Hydrosiences, mid May - mid July 2024.
- HPI, Potsdam, Germany. 24 April - 12 May, 2022.
- University of Waterloo, Waterloo, Canada. Late June-mid July 2018.
- Poznań University of Technology, Poznań, Poland; April 2018.
- Universitat Politècnica de Catalunya, Barcelona, Spain, June 2017, invited Erasmus Mundus Prof. on the Erasmus Mundus Master's Programme in Information Technologies for Business Intelligence (IT4BI)/Erasmus Mundus Joint Master Degree Programme in Big Data Management and Analytics (BDMA).
- Departamento de Ciencias e Ingeniería de la Computación, Universidad Nacional del Sur, Bahía Blanca, Argentina, July 2012 and April 2014 (DST/MINCYT-funded project).
- Knowledge Representation and Reasoning, CSIR-Meraka, Pretoria, South Africa. Late July-Mid Sept 2010. (SA-IT and Net2-funded project)
- Universidad de Ciencias Informáticas, La Habana, Cuba. Late June-Mid July 2010.
- Departamento de Programación, Universidad de la Habana, Cuba, April 2010.
- Knowledge Systems Group, Meraka institute, Pretoria, South Africa. July-August 2008. (SA-IT funded project)
- Laboratory for Applied ontology (LOA-CNR), Trento, Italy, Feb-April 2004.

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## **7 Seminars and Presentations**

### **Keynote talks**

- Detecting, resolving, and avoiding design conflicts in ontology development. Expliquer-le-Croquis-de-Houses (ExCH-2024) Journées sur l'explicabilité et la gestion d'informations géographiques et spatiales. 17-18 June 2024, Arras, France.
- Sources of Bias in Ontologies and Some Consequences in Ontology-Driven Information Systems. Keynote at the 15th Seminar on Ontology Research in Brazil (ONTOBRAS'22), 22-25 November,

2022. Brazil/online.
- Encoding Biases' Influences on Development and Use of Ontologies in the Life Sciences. Keynote at Bio-Ontologies, part of Intelligent Systems for Molecular Biology 2022 (ISMB'22), 10-14 July 2022, Madison, USA.
  - Evidence-based and Ontology-driven Logics for Conceptual Data Modelling – the Journey. Keynote at the PhD symposium of the Future SOC workshop. HPI, Potsdam, Germany, 27 April, 2022.
  - Ontology verbalisation for African languages. Business Intelligence & Semantic Web Colloquium, Yaoundé, Cameroon, 2 December 2019.
  - More Effective Ontology Authoring with Test-Driven Development. Keynote at the PhD symposium of the Future SOC workshop. HPI, Potsdam, Germany, 18 April, 2018.
  - Toward Test-Driven Development for Ontologies. OWLED-ORE 2016, 20 November, 2016, Bologna, Italy.

### ***Invited talks***

- Natural Language Generation for Agglutinating African Languages – A brief overview. Digital Humanities Colloquium, at SADiLaR, 18 May 2022 (online).
- Managing design conflicts in ontology (and KG) development and deployment. Talk at the Future SOC Event. HPI, Potsdam, Germany, 28-29 April, 2022.
- A preliminary assessment of bias in ontologies – their sources and some possible consequences. Competence center on Explainability, Fairness and Acceptability of Intelligent Systems (EFA), University of Ulm, Germany (online). 23 February 2022.
- Resolving and avoiding design conflicts in ontology development and deployment. International Society for Computational Biology academy (ISCB academy). 21 Sept 2021.
- NLP for African languages. AFIRM 2020 summer school, 27-31 January 2020.
- More Effective Ontology Authoring with Test-Driven Development. Universidad de las Ciencias Informáticas, La Habana, Cuba, 8 June 2018.
- Designing an appropriate logic for conceptual modelling languages. Workshop on Logic, Algebra and Category Theory (LAC 2018), La Trobe University, Melbourne, Australia, 12-16 February, 2018.
- Toward interoperability with DLs for evidence-based conceptual modeling language profiles. KRDB Research Centre, Free University of Bozen-Bolzano, Italy, 28 October, 2015.
- Advantages of a PhD from UniBz in starting an academic career. Research career planning and international cooperation, at the Free University of Bozen-Bolzano, Italy, October 27, 2015.
- On the unification of conceptual data modelling languages. Seminar at the Department of Computer Science, Poznan University of Technology, Poland, 16 June 2015.
- An ontology-driven unifying metamodel for UML class diagrams, EER, and ORM2. Dagstuhl seminar 13211 'Automated reasoning on conceptual schemas', 20-24 May 2013.
- Semantic Computing with the WONDER System: Implementation, Challenges and Opportunities for Curriculum Development. University of South Africa, South Africa, 8 September 2010.
- Engineering rough ontologies. University of the Witwatersrand, Johannesburg, South Africa, 26 August 2010.
- Temporal Constraints on Part-Whole Relations. Universidad de las Ciencias Informáticas, La Habana, Cuba, 20 April 2010.
- Desarrollo de ontologías como un nivel de abstracción de las bases de datos relacionales. Department of Informatics, Universidad de la Habana, Cuba, 19 April 2010.
- Logic-based ontologies of environments. Locating Biology, Dagstuhl Workshop, February 2010.
- Representing and Reasoning over a Taxonomy of Part-Whole Relations. 10 September 2009, DERI Galway, Ireland.
- Specifying and coordinating abstractions by taking advantage of granularity. Complex Systems & Artificial Intelligence Research Centre, DISCo, University of Milano-Bicocca, 28 April 2009, Milan, Italy.
- A formal comparison of conceptual data modeling languages—A prelude to intelligent CASE tools.

- Seminar given on July 17, 2008, at the KSG group, Meraka Institute, Pretoria, South Africa.
- A theory of granularity. Agromatica, Instituto de Ciencia Animal, 21 May 2008, San José de las Lajas, Habana, Cuba.
- On modelling and formally representing granularity. Fondazione Bruno Kessler (ITC-IRST), 3 December 2007, Trento, Italy.
- Using bio-ontologies in RDBMSs for querying granular information. Bioinformatics, Ontologies and databases Seminar day 13-2-2006 (SBIOLBD'06), LBD, EPFL, Lausanne, Switzerland.
- Data and ontology integration issues in the biosciences. Seminar given on 23-8-2004 at the Micro-Array Department, Integrative Bioinformatics Unit, University of Amsterdam, The Netherlands.

#### **Other talks** (selection)

- A comparison of different types of declarative modelling, HydroSciences Montpellier, France, 20 June 2024.
- Test-Driven Development of ontologies. Computer Science Department, University of Cape Town, South Africa, May 26, 2016.
- Toward isiZulu Natural Language Generation. Computer Science Department, University of Cape Town, South Africa, June 12, 2014.
- Toward an ontology-driven unifying metamodel for UML class diagrams, EER, and ORM2. Presentation given at the Ontology and Conceptual Modelling Workshop, Tshwane (Pretoria), South Africa, d.d. 15-16 Nov, 2012.
- Ontology-driven formal conceptual data modelling for biological data analysis. Presentation given at the Research Session of the Masters Artificial Intelligence spring School 2011 (MAIS'11), Durban, South Africa, d.d. 27 Sept., 2011.
- Ontology engineering with rough concepts and vague instances. KRDB Lunch Seminar, d.d. 15 June 2010.
- Comparing and unifying industry-grade conceptual data modelling languages. KRDB Lunch Seminar, d.d. 2 December 2008.
- Ontological and logical aspects of part-whole relations. KRDB Lunch Seminar series, 19 February 2008.
- Current characteristics and historical perspective on 'CS and IT with/for Biology'. Presentation given on 20-10-2005 at the KRDB Research Centre, Free University of Bozen-Bolzano, Italy.
- ORM introduction. Seminar given on 27-4-2004 at the Laboratory of Applied Ontology, Trento, and Free University Bolzano/Bozen, Italy.
- Presentation of accepted papers at conferences and workshops: Interjoven04, MIE05, DILS05, ORM05, KWEPSY06, WSPI06, GrC06, ORM06, OWLED07, SeS07, AI\*IA07, DL07, GrC07, DL08, WORM08, EMMSAD08, KR08, OWLED08, Geomatics09, RST09, GrC09, MTSR09, ORM09, AI\*IA09, DL10, EKAW10, ORM10, ESWC'11, AFRICON'11, SAICSIT'11, ESWC'12, OWLED'12, EKAW'12, SAARMSTE'13, K-CAP'13, KEOD'13, MEDI'13, ER'13, RuleML'14, OWLED'14, EKAW'14, SAARMSTE'15, ADBIS'15, SAICSIT'15, ER'15, DL'16, ESWC'16, ADBIS'16, INLG'16, WebNLG'16, EKAW'16, ESWC'17, LDK'17, CREOL'17, FOUST-II'17, IST-Africa'18, CNL'18, FOIS'18, KGSWC'19, MTSR'19, FAIR'19, ICBO'20, IST-Africa'21, FOIS'20, CAOS'21, WikiWorkshop22, FOUST-VI'22, ICBO'22, FOIS'23, SAC'24, CAOS'24, INLG'24, EKAW'24.

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## **8 Organisational activities, admin, and reviewing**

### **Editorial board memberships**

- Transactions on Graph Data and Knowledge (2023-present)
- Applied Ontology journal (2017-present)



### **Conference/Workshop Chair**

- General Chair of the 15th International Conference on Formal Ontologies in Information Systems 2025.
- PC Chair (with Sina Zarriess and Hung-yi Lee) of the 16th International Natural Language Generation Conference 2023.
- PC Chair (with Fernanda Baiiao and Estefanía Serral Asensio) of the 8th Symposium on Conceptual Modeling Education (SCME), part of ER 2023.
- PC Chair (with Valentina Presutti) of the “Resources” track of the International Semantic Web Conference 2022.
- Chair (with Pinar Yolum) of the Demo track of IJCAI 2021.
- PC Chair (with Michel Dumontier) of EKAW 2020.
- PC Chair (with Fabrizio Sebastiani and Tanya Berger-Wolf) of the AFIRM 2020 summer school.
- PC Chair (with Abraham Bernstein) of the 3rd “Outrageous Ideas” track of the International Semantic Web Conference 2019.
- Chair (With Brian Davis, Adam Wyner) of the 6th Workshop on Controlled Natural Language, Maynooth, Ireland, 27-28 August, 2018.
- Local Chair of the 4th International School on Applied Ontology, 10-15 September 2018, Cape Town, South Africa.
- Local Chair 10th International Conference on Formal Ontologies in Information Systems (FOIS 2018), Cape Town.
- PC Chair (with Zena Wood) 3rd International School on Applied Ontology, June 27 - July 2, 2016, Bolzano, Italy.
- Chair (with Diego Calvanese, Alfredo Cuzzocrea) of the 2nd Workshop on Logics and Reasoning for Conceptual Models, April 21, 2016, Cape Town, South Africa. Co-located with DL’16 and KR’16.
- Local Chair of the Forum on AI Research 2015 (FAIR’15). UCT, Cape Town, March 2015.
- PC Chair (with Valentina Tamma) of the 11th OWL: Experiences and Directions workshop (OWLED’14), 17-18 October, 2014, Riva del Garda, Italy
- Track Chair (with Jerome Euzenat) on “Ontologies, Metadata, and Vocabularies” of the Extended Semantic Web Conference (ESWC’14), Crete, Greece, May 2014. (ISI-indexed conference)
- PC co-Chair of the “Logics and Reasoning for Conceptual Models”, December 14, 2013, co-located with LPAR-19.
- Main organiser of the Masters Artificial Intelligence spring School 2011 (MAIS’11), Durban, South Africa (26-30 Sept. 2011).
- PC co-Chair of the KRDB PhD Workshop, 11 May 2007, KRDB Research Centre, Free University of Bozen-Bolzano. (with Mariano Rodríguez).

### **Teaching management and administration**

- Computer Science Honours Programme (4th year, after a BSc) Convenor, 2024-present; managing around 10 courses and their lecturers, 1 TA, and 75 students.
- CS2 Convenor: CSC2001F, CSC2002S, CSC2004Z in 2020-2021, for about 3x425 CS2 students, 6-7 lecturers, 4 TAs, a chief scientific officer, and 40-50 tutors.
- CS1 Convenor: CSC1015F, CSC1017F, CSC1016S, in 2015-2017, for about  $\pm 800$  and  $\pm 500$  students, 5-9 lectures, 5 TAs, a scientific officer, and some 100 tutors.
- Undergraduate research convenor CSC2005Z in 2020-2021, 2024;  $\pm 10$  – 15 students and their supervisors.
- Convenor extended degree programme: CSC1010H, CSC1011H, in 2019,  $\pm 90$  and  $\pm 50$  students.

### **Other organisational activities and university committee membership**

- Member (Dean’s nominee) of the Senate Language Policy Committee, UCT; 2016-2023.
- Member of the departmental subcommittee on transformation; 2017-present.
- Member of the Faculty of Science Transformation Committee, UCT; 2020-April 2023.

- Employment Equity representative, UCT; June 2017-March 2022.
- Member of the Faculty of Science Research Committee, UCT; 2020-2021.
- Member of the Executive Council of the International Association for Ontology and its Applications. 2019-2020.
- Member of the Faculty committee on Communications and Marketing, UCT; April 2016-December 2018.
- Chair (with Zena Wood) of the Technical Committee on Education of the International Association for Ontology and its Applications. July 2014-2018.
- Student competitions (Coach ACM International Collegiate Programming Contest and Standard Bank IT Challenge, 2014-present), UCT (Feb. 2014-present), Olympiad Liaison, 2014.
- Member of the Higher Degrees & Research Committee, School of Mathematics, Statistics, and Computer Science, UKZN (March 2012-Dec. 2013).
- Library Liaison for CS, UKZN (June 2011-March 2012).
- Responsible person for the KRDB seminars (10-'07/3-'10).
- Co-organiser KRDB Seminar Series 2006, KRDB Research Centre, Free University of Bozen-Bolzano. (with Rosella Gennari).
- Organiser CS and IT with/for Biology, Seminar Series at the KRDB Research Centre, Free University of Bozen-Bolzano. Oct-Dec 2005 (with Enrico Franconi).
- Academic organisational and managerial activities in the capacity of student representation:
  - PhD Students' representative at the Faculty of Computer Science, Free University of Bozen-Bolzano, 11-'06/1-'08.
  - Student member of the Executive Committees of the Education Institute Food Technology and Nutrition at the Wageningen Agricultural University, the Netherlands, 6-'97/1-'98.
  - Student member of the Cluster of the Departments Food Technology and Human Nutrition, at the Wageningen Agricultural University, the Netherlands, 10-'95/7-'96.
  - Elected Member of the Faculty/University Council of the Wageningen Agricultural University on behalf of the Progressive Student Fraction (fulltime). Committee member of Research & Education and the Commission Student Affairs (of which the latter as vice-chairperson). 9-'94/9-'95.
- Other activities (selection):
  - Project proposal writing experience as initiator, PI, WP leader, and contributor.
  - Webmaster: LRCM'16, MAIS'11, CS PhD students website (with Mariano Rodríguez), Professors without Borders (4-'06/12-'10), Irish Peace Society (10-'02/10-'04).
  - Member of the World Wide Web Consortium's Health Care & Life Sciences Special Interest Group (W3C HCLS IG) <http://www.w3.org/2001/sw/hcls/> (active participant from 2005 to 2007)

### ***Program Committee membership, and reviewing for journals***

- PC member:
  - International Conference on Knowledge Engineering and Knowledge Management (EKAW'14, EKAW'16, EKAW'18, EKAW'24)
  - International Conference on Natural Language Generation (INLG'24)
  - International Conference on Formal Ontology in Information Systems (FOIS'16, FOIS'18, FOIS'20, FOIS'21, FOIS'23, FOIS'24)
  - The 31st International Joint Conference on Artificial Intelligence - Demos (2022, 2024)
  - ACM Symposium on Applied Computing (ACM SAC'24)
  - International Semantic Web Conference (ISWC'14, ISWC'15, ISWC'17, ISWC'19, ISWC'21, ISWC'23)
  - Extended Semantic Web Conference (ESWC'12, ESWC'15, ESWC'16, ESWC'22)
  - International Conference on Knowledge Representation and Reasoning recently published research track (KR'22)

- 28th International Workshop on Description Logics (DL'15, DL'16, DL'18, DL'21, DL'22)
- TheWebConf (formerly WWW) 2020, 2021
- Pacific-Rim Conference on Artificial Intelligence (PRICAI'19, PRICAI'21)
- International Workshop on Controlled Natural Language (CNL'21)
- European Conference on Artificial Intelligence (ECAI'20)
- Australasian Joint Conference on Artificial Intelligence (AI'13, AI'17, AI'20)
- 4th Workshop on Foundational Ontology (FOUST IV), 2020
- Iberoamerican Knowledge Graphs and Semantic Web Conference (KGSWC'19, KGSWC'20)
- Annual Conference of the South African Institute of Computer Scientists and Information Technologists (SAICSIT'15, SAICSIT'16, SAICSIT'17)
- BigNovelTI 2017
- JOWO 2017
- Extended Semantic Web Conference (ESWC'12, ESWC'15, ESWC'16)
- OWL: Experiences and Directions workshop (OWLED'15, OWLED'16)
- Argentine Symposium on Ontologies and their Applications (SAOA'15)
- International Joint Conference on Artificial Intelligence (IJCAI'15)
- Formal Ontologies for Artificial Intelligence (FOFAI'15)
- International Workshop on Debugging Ontologies and Ontology Mappings (WoDOOM'13, WoDOOM'14, WoDOOM'15)
- First International Workshop on Reasoning about Preferences, Uncertainty and Vagueness (PRUV'14)
- International Conference on Biomedical Ontology 2011 (ICBO'11, ICBO'12, ICBO'13, ICBO'14)
- Joint Rough Set Symposium (JRS'13)
- 27th AAAI Conference on Artificial Intelligence, "AI and the Web" track (AAAI'13)
- 6th International Conference on Rough Sets and Knowledge Technology (RSKT'11)
- IEEE International Conference on Granular Computing (GrC'11, GrC'12)
- 5th International Workshop on Modular Ontologies (WoMO'11)
- Metadata & Semantics Research Conference, Special Track on Agriculture, Food & the Environment (MTSR'10, MTSR'12)
- 6th International Workshop on Fact-Oriented Modeling (ORM'10)
- Australasian Ontology Workshop (AOW'09, AOW'10, AOW'11, AOW'12)
- International Conference on Knowledge Engineering and Ontology Development (KEOD'09, KEOD'10)
- Semantic Web Applications and Tools for the Life Sciences (SWAT4LS'08, SWAT4LS'09, SWAT4LS'10, SWAT4LS'11)
- Knowledge Representation Ontology Workshop 2008 (KROW'08)
- Int. Workshop Semantic Web and Health Care and Life Sciences 2008
- Int. Workshop Network Tools and Applications in Biology 2007 (NETTAB'07)
- Int. Workshop on Engineering Semantic Agent Systems (ESAS'06, ESAS'07, ESAS'08, ESAS'09)
- Reviewer for journals:
  - Applied Ontology
  - Artificial Intelligence
  - Artificial Intelligence in Medicine
  - BMC Bioinformatics
  - Communications of the ACM
  - Concurrency and Computation: Practice and Experience
  - Data & Knowledge Engineering
  - Expert Systems with Applications
  - Environmental Modelling & Software
  - Expert Systems With Applications
  - Fundamenta Informaticae

- IEEE Transactions on Fuzzy Systems
- IEEE Transactions on Knowledge and Data Engineering
- Information Research
- Information Sciences
- International Journal of Approximate Reasoning
- International Journal of Cooperative Information Systems
- International Journal of Metadata, Semantics, and Ontologies
- International Studies in the Philosophy of Science
- Journal Of Biomedical Semantics
- Journal on Data Semantics
- Journal of Web Semantics
- Language Resources and Evaluation
- Knowledge Engineering Review
- Knowledge Management Research & Practice
- Methods in Ecology and Evolution
- Semantic Web Journal
- South African Computer Journal
- Other paper reviewing (delegated): KR'10, IJCAI'09, ESWC'07, ESWC'08, ESWC'09, ESLLI'09 student session, JELIA'08, ECDM'08, DL'08, CBMS'06 Special track on Ontologies for Biomedical Systems, ODBASE'05, ODBASE'06.
- Project proposal reviewer for projects submitted at various research organisations, such as Fundação para a Ciência e a Tecnologia (Portuguese Foundation for Science and Technology), Deutsche Forschungsgemeinschaft (German Research Foundation), and the Research Council for Natural Sciences and Engineering at the Academy of Finland.
- Reviewer NRF rating applications

### **Memberships**

- Hasso-Plattner Institute Research School in Computer Science for Africa at UCT
- International Association for Ontology and its Applications (IAOA)
- South African Institute for Computer Scientists and Information Technologists (SAICSIT)
- Institute for IT Professionals South Africa (IITPSA)
- Previous memberships: ICT4D Research Centre at UCT, Southern African Association for Research in Mathematics, Science, and Technology Education (SAARMSTE), Associazione Italiana per la Intelligenza Artificiale (AI\*IA)

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## **9 Society Engagement**

A selection of engagement activities:

### **Talks and panels**

- DAMA Southern Africa talk (online), entitled 'Strengths and limitations of different types of declarative modelling languages', 5 August 2024.
- Invited talk, entitled 'Ontologies: what they are and what they're good for' at Siemens Energy (online), 11 July 2024.
- Invited presentation on 'Ethical issues regarding the use of AI authoring tools in research' at the Ethics in Research Committee Workshop at UCT, 2 August 2023.
- Invited talk, entitled 'Knowledge-to-text Natural Language Generation for Agglutinating African Languages'. TechTalk at the Wikimedia Foundation google.org fellows offsite workshop, Google Zurich, Switzerland, 23-26 August 2022.
- Invited talk, entitled 'Big Data Integration: Building the Intelligent Enterprise', at the "Role of Women in the Intelligent Enterprise Era" industry conference, Sandton, South Africa, 5-6 August

2019.

- Panelist as AI expert at the African Regional Conference on Nuclear Disarmament and Lethal Autonomous Weapon Systems, in Pretoria, South Africa, 17 August 2018.
- Games tegen terrorisme en voor conflict-oplossing—Speltheoretische onderhandelingen met coalities van gekwetste groepen en de regering. Gaming for War or Peace: ICT voor Wereldvrede Symposium, Stichting Vredescentrum Eindhoven (Peace Center Eindhoven), 4 November 2008, Eindhoven, the Netherlands.

### **Activities**

- Expert witness on a legal case regarding software, in South Africa (2020). This included authoring an expert witness report, testifying, and providing assistance with attendant computing topics of the case.
- South African Computer Olympiad Trust: trustee, as UCT representative (2014).
- Member of Informatici senza Frontiere [Informaticians without borders]; 3-'10/12-'12.
- Webmaster of the Irish Peace Society, University of Limerick, Ireland. (2002-2004).

### **Articles, essays, and books**

- *Autonomous Decisions – computing quandaries in short fiction*, an anthology of 10 short stories incorporating AI ethics and computer ethics, published with KREST Publishers, 2025.
- “A computer science technique could help gauge when the pandemic is ‘over’ ” for The Conversation, 20 March 2022, with about 16000 views by late March, 2022, and republished on, among others, The Next Web, the Raw Story, and many others. Available online: <https://theconversation.com/a-computer-science-technique-could-help-gauge-when-the-pandemic-is-over-178074>.
- *No taming of the enthusiast – A scenic route into computer science*, a memoir published with Porcupine Press in November 2021.
- “How we’re making the tools to connect isiXhosa and isiZulu to the digital age” for The Conversation, 12 March 2018, with over 8000 views (March 2022) and republished on, a.o., News24/CityPress and the Mail & Guardian. Available online: <http://theconversation.com/how-were-making-the-tools-to-connect-isixhosa-and-isizulu-to-the-digital-age-92859>.
- *The nonviolent personality*. 2011. Translated from the Italian original *La personalità nonviolenta* written by Giuliano Pontara. Includes translation, editing, typesetting and cover design.
- Keet, C.M. Dirty wars, databases, and indices. *Peace & Conflict Review*, 2009, **4**(1): 75–78.