Carmen S. Chui, Ph.D.

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Profile

- Postdoctoral fellow specializing in the design and analysis of ontologies, focusing on knowledge representation and automated reasoning.

- Excellent communication, teamwork, writing, and management skills developed through previous academic and industry positions.

- Canadian citizen fluent in English with working proficiency in French.

Education

Ph.D. in Industrial Engineering, University of Toronto, June 2019.

M.A.Sc. in Industrial Engineering, University of Toronto, November 2013.

B.A.Sc. (with honours) in Industrial Engineering, University of Toronto, June 2011.

Experience

POSTDOCTORAL FELLOW *Toronto, ON*
University of Toronto (UofT) & Royal Bank of Canada (RBC) *March 2019 – present*

- Supervised by Professor Michael Grüninger of the Semantic Technologies Lab at UofT.
- Currently collaborating with RBC's Data & Analytics team (DNA) to analyze financial ontologies for business intelligence projects and to build an in-house ontology with the bank's subject matter experts and data modellers, along with converting bank data sets into a knowledge graph-readable format.

GRADUATE RESEARCH ASSISTANT *Toronto, ON*
University of Toronto *September 2011 – March 2019*

- Helped specify the metadata and formalize logical methods to relate ontologies to one another within the COmmon Logic Ontology REpository (COLORE) project and assist with *local* International Association for Ontology & Its Application (IAOA) events.

TEACHING ASSISTANT *Toronto, ON*
University of Toronto *September 2011 – April 2018*

- In addition to proctoring faculty-wide examinations, I was also the head TA for the Introduction to Mechanical & Industrial Engineering (MIE191), Design & Analysis of Information Systems (MIE350), Knowledge Modelling & Management (MIE457), and Enterprise Modelling (MIE1505) courses.

Publications

Google Scholar page: https://scholar.google.ca/citations?user=R1gxO74AAAAJ

DBLP page: http://dblp2.uni-trier.de/pers/hd/c/Chui:Carmen

Research Theses

[T1] **Chui, C.** "A Molecular Structure Ontology for Medicinal Chemistry". Ph.D. Thesis. University of Toronto, June 2019. URL: http://hdl.handle.net/1807/97001.

- Adviser: Michael Grüninger
- Committee: Gary Bader, Mark S. Fox, Michael Grüninger, L.H. Shu
- External Appraiser: Michel Dumontier, Maastricht University

[T2] **Chui, C.** "Axiomatized Relationships between Ontologies". M.A.Sc. Thesis. University of Toronto, Nov. 2013. URL: http://hdl.handle.net/1807/42747.

- Adviser: Michael Grüninger
- Committee: Mark S. Fox, Michael Grüninger, L.H. Shu

[T3] **Chui, C.** "Reasoning About Changes". B.A.Sc. Thesis. University of Toronto, June 2011. URL: http://stl.mie.utoronto.ca/cchui/basc_thesis.pdf.

- Adviser: Michael Grüninger
- Fourth year undergraduate research thesis completed for MIE498Y

Articles in Refereed Journals

[J1] Aameri, B., **Chui, C.**, Grüninger, M., Hahmann, T., Ru, Y., "The FOUnt Ontologies for Quantities, Units, and the Physical World". In: *Applied Ontology* (2020). In press for the 2020 Special Edition. Revised and expanded version of [C1].

Refereed Full Papers in Conference Proceedings

[C1] Grüninger, M., Aameri, B., **Chui, C.**, Hahmann, T., Ru, Y., "Foundational Ontologies for Units of Measure". In: *Formal Ontology in Information Systems - Proceedings of the 10th International Conference, FOIS 2018, Cape Town, South Africa, 19-21 September 2018*. Acceptance Rate: 29.2% (14 papers of 48 submissions). **Won Distinguished Paper Award**. 2018, pp. 211–224. URL: https://doi.org/10.3233/978-1-61499-910-2-211.

[C2] **Chui, C.**, Grüninger, M., "A Molecular Structure Ontology for Medicinal Chemistry". In: *Formal Ontology in Information Systems - Proceedings of the 9th International Conference, FOIS 2016, Annecy, France, July 6-9, 2016*. Acceptance Rate: 30.9% (25 papers of 80 submissions). 2016, pp. 285–298. URL: http://dx.doi.org/10.3233/978-1-61499-660-6-285.

[C3] **Chui, C.**, Grüninger, M., "Mathematical Foundations for Participation Ontologies". In: *Formal Ontology in Information Systems - Proceedings of the Eighth International Conference, FOIS 2014, September, 22-25, 2014, Rio de Janeiro, Brazil*. Acceptance Rate: 29.6% (24 papers of 81 submissions). 2014, pp. 105–118. URL: http://dx.doi.org/10.3233/978-1-61499-438-1-105.

[C4] **Chui, C.**, Grüninger, M., "Merging the DOLCE and PSL Upper Ontologies". In: *KEOD 2014 - Proceedings of the International Conference on Knowledge Engineering and Ontology Development, Rome, Italy, 21-24 October, 2014.* Acceptance Rate: 18% (78 submissions). An updated and revised version of this paper appears in [B1]. **Nominated for Best Student Paper Award.** SciTePress, 2014, pp. 16–26. URL: https://doi.org/10.5220/0005027100160026.

[C5] Grüninger, M., Hahmann, T., Katsumi, M., **Chui, C.,** "A Sideways Look at Upper Ontologies". In: *Formal Ontology in Information Systems - Proceedings of the Eighth International Conference, FOIS 2014, September, 22-25, 2014, Rio de Janeiro, Brazil.* Acceptance Rate: 29.6% (24 papers of 81 submissions). 2014, pp. 9–22. URL: https://doi.org/10.3233/978-1-61499-438-1-9.

Refereed Full Papers in Workshop Proceedings

[W1] **Chui, C.**, Grüninger, M., "Verification and Modularization of the DOLCE Upper Ontology". In: *Proceedings of the Joint Ontology Workshops 2017 Episode 3: The Tyrolean Autumn of Ontology, Bozen-Bolzano, Italy, September 21-23, 2017.* Sept. 2017. URL: http://ceur-ws.org/Vol-2050/FOUST_paper_1.pdf.

[W2] Grüninger, M., **Chui, C.**, Katsumi, M., "Upper Ontologies in COLORE". In: *Proceedings of the Joint Ontology Workshops 2017 Episode 3: The Tyrolean Autumn of Ontology, Bozen-Bolzano, Italy, September 21-23, 2017.* Sept. 2017. URL: http://ceur-ws.org/Vol-2050/FOUST_paper_2.pdf.

[W3] Aameri, B., Grüninger, M., **Chui, C.,** "Anti-Modules". In: *Proceedings of the Joint Ontology Workshops 2016 Episode 2: The French Summer of Ontology co-located with the 9th International Conference on Formal Ontology in Information Systems (FOIS 2016).* Annecy, France, July 2016. URL: http://ceur-ws.org/Vol-1660/womocoe-paper2.pdf.

[W4] **Chui, C.**, Grüninger, M., van Berkel, M., "Ontology Mapping in an e-Commerce Application". In: *Formal Ontologies Meet Industry - 7th International Workshop, FOMI 2015, Berlin, Germany, August 5, 2015, Proceedings.* Acceptance Rate: 61.1% (11 papers of 18 submissions). 2015, pp. 25–38. URL: https://doi.org/10.1007/978-3-319-21545-7_3.

Refereed Book Chapters

[B1] **Chui, C.**, Grüninger, M., "Techniques for Merging Upper Ontologies". In: *Knowledge Discovery, Knowledge Engineering and Knowledge Management - 6th International Joint Conference, IC3K 2014, Rome, Italy, October 21-24, 2014, Revised Selected Papers.* This is an updated and revised version of [C4]. 2014, pp. 273–292. URL: https://doi.org/10.1007/978-3-319-25840-9_18.

Prepared Manuscripts

[M1] **Chui, C.**, Grüninger, M., "Drug Discovery as Model Construction". To be submitted to the Journal of Cheminformatics (*J. Cheminformatics*).

[M2] **Chui, C.**, Grüninger, M., Wong, J., "An Ontology for Kinship". To be submitted to the 11th International Conference on Formal Ontology in Information Systems (FOIS 2020).

Professional Development

UofT Prospective Professors in Training (PPIT) Program Certificate, 2018.

UofT Teaching Fundamentals (TF) Certificate, 2012.

Professional Activities & Associations

EDM Council, 2019–present.

International Association for Ontology & Its Applications (IAOA), 2011–present.

ONTOLOG Forum, 2011–present.

Ontario Society of Professional Engineers (OSPE), 2011–present.

Institute of Electrical and Electronics Engineers (IEEE), 2011–present.

Institute of Industrial Engineers (IIE), 2011–present.

Awards and Honours

Distinguished Paper Award at FOIS 2018 for [C1], September 2018.

Nominated for Best Student Paper award at KEOD 2014 for [C4], October 2014.

Mechanical And Industrial Engineering Admission Scholarship ($1,000), 2007.

Faculty Of Applied Science And Engineering Admission Scholarship ($1,000), 2007.

Technical Skills

Programming & Markup Languages

CSS, HTML, Java, JavaScript, PHP, Python, SQL, TEX, Visual Basic, XHTML, and XML.

Knowledge Modelling & Representation Languages

Business Process Model and Notation (BPMN), Common Logic (CL), Description Logic (DL), First-Order Logic (FOL), Integration DEFinition (IDEF), Web Ontology Language (OWL), Petri Nets, Prolog, Resource Description Framework/Schema (RDF/S; Knowledge Graph), SPARQL Protocol and RDF Query Language (SPARQL), Semantic Web Rule Language (SWRL), Thousands of Problems for Theorem Provers (TPTP), and Unified Modeling Language (UML).

Theorem Provers, Reasoners, & Model Builders

Paradox, Protégé, Prover9-Mace4, SWI-Prolog, and Vampire.

Computer Applications

Adobe Creative Suite (Illustrator, Photoshop), Eclipse, Intalio BPMS, LaTeX, MATLAB, Microsoft Office (Access, Excel, PowerPoint, Project, Visio, & Word), Microsoft SQL Server, Minitab, and Simul8.