

CARMEN S. CHUI

Ph.D. Candidate

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SUMMARY

I am a final year Ph.D. candidate specializing in knowledge representation and modelling, as well as the design and analysis of first-order ontologies. My current research involves the design of a molecular structure ontology for medicinal chemistry in first-order logic, as well as providing model construction techniques for drug discovery. I hope to acquire research, teaching, and working experience in an environment where my skills and educational foundation can be further developed.

RESEARCH INTERESTS

- Ontology design, mapping, integration, and verification
- Knowledge representation & modelling
- Automated reasoning of first-order ontologies
- Applications of ontologies to data and knowledge integration
- Engineering education

EDUCATION

Ph.D. in Industrial Engineering

09/2013–present

🎓 University of Toronto

📍 Toronto, Canada

- Dissertation: “A Molecular Structure Ontology for Medicinal Chemistry”
- Adviser: [Michael Grüninger](#)
- Committee: [Mark Fox](#), [Michael Grüninger](#), [L.H. Shu](#)
- Completed the [Prospective Professors in Training \(PPIT\) Program](#) in 2018

M.A.Sc. in Industrial Engineering

09/2011–08/2013

🎓 University of Toronto

📍 Toronto, Canada

- Dissertation: “[Axiomatized Relationships Between Ontologies](#)”
- Adviser: [Michael Grüninger](#)
- Committee: [Mark Fox](#), [Michael Grüninger](#), [L.H. Shu](#)
- Received [Teaching Fundamentals \(TF\) Certificate](#) from the Teaching Assistants' Training Program (TATP) in 2012

B.A.Sc. (with honours) in Industrial Engineering

09/2007–06/2011

🎓 University of Toronto

📍 Toronto, Canada

- Information Systems option stream
- Fourth year research thesis: “Reasoning About Changes”

- Google Scholar page: <https://scholar.google.ca/citations?user=R1gx074AAAAAJ>
- DBLP page: <http://dblp2.uni-trier.de/pers/hd/c/Chui:Carmen>

Peer-Reviewed Conference Proceedings (Full Papers)

- [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. ISBN: 978-989-758-049-9. 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>.

Peer-Reviewed Workshop Proceedings (Full Papers)

- [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.

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*. 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](#).

Scholarly Presentations & Talks

- [S1] *An Ontological Approach to Medicinal Chemistry*. Presented to The Lautens Research Group in the Department of Chemistry at the University of Toronto. July 2017.
- [S2] *A Molecular Structure Ontology for Medicinal Chemistry*. Presented [C2] at the Formal Ontology in Information Systems (FOIS 2016) in Annecy, France. July 2016.
- [S3] *Anti-Modules*. Presented [W3] at the Proceedings of the Joint Ontology Workshops (JOWO 2016). July 2016.
- [S4] *Merging the DOLCE and PSL Upper Ontologies*. Presented [C4] at the Proceedings of the International Conference on Knowledge Engineering and Ontology Development (KEOD 2014). Oct. 2014.
- [S5] *Breaking Down DOLCE: Overview of the Verification of the DOLCE Ontology*. Presented at the Toronto Ontology Festival (TOFFEE). Aug. 2012.
- [S6] *Overview of Current Research Projects*. Presented at the [Toronto Semantic Web Meetup Group: What's Happening in the Semantic Technologies Lab?](#) Event. Oct. 2012.
- [S7] *Reasoning with Ontology Mappings*. Presented at the MIE Scientific Writing Course (run by Debby Repka). July 2012.

TEACHING AND MENTORING EXPERIENCE

Teaching Assistant

 University of Toronto

09/2011–present

 Toronto, Canada

In addition to invigilating faculty-wide exams, I designed and conducted tutorials, held office hours, graded progress and final reports, and designed programming labs and quizzes, and graded assignments, tests, and exams.

At the *undergraduate* level:

- MIE191: Introduction to Mechanical and Industrial Engineering Winter 2015–2017
- Taught by [Professor Pierre Sullivan](#)

- MIE350: Design & Analysis of Information Systems Fall 2011–2017
 - Taught by Professors [Reza Samavi](#) (Fall 2011) and [Michael Grüninger](#) (Fall 2012 onwards)
- MIE457: Knowledge Modelling & Management Winter 2015–2018
 - Taught by [Professor Michael Grüninger](#)

At the *graduate* level:

- MIE1505: Enterprise Modelling Fall 2016
 - Taught by [Professor Michael Grüninger](#)

Client/Student Mentor

01/2017–04/2017

 University of Toronto

 Toronto, Canada

As part of the APS 1203/1204 course offered with the Prospective Professors in Training (PPIT) program, I was a mentor for a group of six first-year undergraduate students taking their Engineering Strategies & Practice II (APS 112) course. The group's project is to redesign mathematics in the classroom to make the subject more engaging and interesting for high-school students. We have been featured in the UofT Engineering News in the following article: <http://news.engineering.utoronto.ca/engineering-educational-experience/>.

RESEARCH AND INDUSTRY EXPERIENCE

Graduate Research Assistant

09/2011–present


 [Semantic Technologies Lab](#), University of Toronto

 Toronto, Canada

- Help specify the metadata and formalize logical methods to relate ontologies to one another within the [COMmon Logic Ontology REpository \(COLORE\)](#) project
- Assisted with *local* International Association for Ontology & Its Application (IAOA) events:
 - [IAOA Summer Institute on Upper Ontologies 2017](#)
 - [Toronto Ontology Festival \(TOFFEE\) 2012](#)

Database Analyst


05/2010–08/2010


 [Mercer \(Canada\) Ltd.](#)

 Toronto, Canada

Web Application Support Specialist, Database Analyst


05/2009–08/2009

 [Mercer \(Canada\) Ltd.](#)

 Toronto, Canada

Web Application Support Specialist

05/2008–08/2008

 [Mercer \(Canada\) Ltd.](#)

 Toronto, Canada

Student Intern (Cell Culture of Myometrial Cells)

06/2006–08/2006

 [Lunenfeld-Tanenbaum Research Institute](#), Mount Sinai Hospital

 Toronto, Canada

TECHNICAL SKILLS

Programming & Markup Languages CSS, HTML, Java, JavaScript, PHP, Python, SQL, T_EX, Visual Basic, XHTML, and XML.

Knowledge Modelling/Representation Languages BPMN, Common Logic, Description Logic, First-Order Logic, IDEF, OWL, Petri Nets, Prolog, Prover9, RDF/S, Simul8, SPARQL, SWRL, and UML.

Computer Applications Adobe Creative Suite (Illustrator, Photoshop), Eclipse, Intalio BPMS, T_EX, MATLAB, Microsoft Office (Access, Excel, PowerPoint, Project, Visio, & Word), Microsoft SQL Server, Minitab, Prolog, Protégé, Prover9-Mace4, and Vampire.

Operating Systems Macintosh OS X, Linux, Microsoft Windows.

AWARDS AND HONOURS

<i>Distinguished Paper Award at FOIS 2018 for [C1]</i>	September 2018
<i>Nominated for Best Student Paper award at KEOD 2014 for [C4]</i>	October 2014
<i>Mechanical And Industrial Engineering Admission Scholarship (\$1,000)</i>	2007
<i>Faculty Of Applied Science And Engineering Admission Scholarship (\$1,000)</i>	2007

PROFESSIONAL ACTIVITIES & ASSOCIATIONS

<i>International Association for Ontology & Its Applications (IAOA)</i>	2011–present
<i>ONTOLOG Forum</i>	2011–present
<i>Ontario Society of Professional Engineers (OSPE)</i>	2011–present
<i>Institute of Electrical and Electronics Engineers (IEEE)</i>	2011–present
<i>Institute of Industrial Engineers (IIE)</i>	2011–present

PERSONAL

Languages English (native), French (limited working proficiency)

Citizenship Canadian