

# Christoph Sydora

csydora@ualberta.ca | 780-977-1400 | www.csydora.ca

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## Research Interests:

- Building Information Modeling (BIM)
  - BIM automated model-checking and evaluation
  - Generative building design
  - Collaborative service/cloud-based BIM frameworks
  - Building occupancy simulation
  - Game engine technology for building design
  - Human-Computer Interfaces (AR/VR) in design
  - Construction manufacturing software application
  - Smart Home Design / Digital Twins
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## Education:

<b>Doctor of Philosophy (PhD) in Computing Science</b> University of Alberta, Canada (GPA: 4.000)	Jan/2020 – Sept/2024
<b>Master of Science (MSc) in Computing Science - Thesis Based Program</b> University of Alberta, Canada (GPA: 3.925)	Sept/2017 – Sept/2019
<b>Bachelor of Science (BSc) with Specialization in Computing Science - Science Internship Program</b> University of Alberta, Canada (GPA: 3.433)	Sept/2011 – Dec/2016
<b>University Study Abroad</b> University of Sydney, Australia	Mar/2014 – June/2014

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## Selected Work Experience:

<b>Data Scientist</b> <b>PCL Construction Management Inc., Edmonton Alberta, Canada</b> <ul style="list-style-type: none"><li>- Working on problems relating to electrical cable routing optimization in large industrial sites. Specifically relating to routing guidelines rule compliance.</li></ul>	Dec/2024 – Current
<b>Postdoctoral Fellow (PDF)</b> <b>Department of Computing Science, University of Alberta, Canada</b> <ul style="list-style-type: none"><li>- Researching and publishing BIM related projects.</li><li>- Mentoring graduate students in Computing Science.</li></ul>	Oct/2024 – Current
<b>Graduate Research Assistant (PhD)</b> <b>Department of Computing Science, University of Alberta, Canada</b> <ul style="list-style-type: none"><li>- Worked on thesis-related projects and publishing results.</li><li>- Creating and carrying out user studies and surveys.</li><li>- Assisted fellow students in the lab with projects.</li><li>- Mentored summer undergraduate students in Computing Science.</li><li>- Completed course work and published course projects results.</li></ul>	May/2020 – Sept/2024
<b>Graduate Teaching Assistant (PhD)</b> <b>Department of Computing Science, University of Alberta, Canada - CMPUT 312: Robotics and Mechatronics</b> <ul style="list-style-type: none"><li>- Organized and hosted lab sessions on mobile and arm robotics.</li><li>- Marked assignments and exams and helped students with course projects.</li></ul>	Sept/2021 – Dec/2021, Sept/2022 – Dec/2022, Sept/2023 – Dec/2023
<b>Graduate Teaching Assistant (PhD)</b> <b>Department of Computing Science, University of Alberta, Canada - CMPUT 296: Games AI</b> <ul style="list-style-type: none"><li>- Hosted lab/seminar sessions and held weekly office hours.</li></ul>	Jan/2020 – Apr/2020, Sept/2020 – Dec/2020

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- Marked written quizzes and helped students with coursework.

## **Graduate Research Assistant (MSc)**

Jan/2018 – Aug/2019

### **Department of Computing Science, University of Alberta, Canada**

- Worked on thesis projects and published results.
- Served as a client for CMPUT 401: Software Process and Product Management, providing guidance and project specification for course projects.
- Assisted fellow students in the lab with projects.
- Supervised undergraduate internship students in both Computing Science and Civil Engineering labs.
- Completed course work and published course projects results.

## **Graduate Teaching Assistant (MSc)**

Sept/2017 – Dec/2017

### **Department of Computing Science, University of Alberta, Canada - CMPUT 340: Numerical Methods**

- Prepared, presented, and evaluated lab assignments.
- Marked written assignments and helped students with course questions.

## **Research Assistant**

Sept/2016 – Aug/2017

### **Department of Civil and Environmental Engineering, University of Alberta, Canada**

- Developed building modelling applications.
- Published research findings and results.

## **Programmer (BSc)**

May/2015 – Aug/2016

### **Hole School of Construction Engineering, University of Alberta, Canada**

- Worked with a team of engineers and programmers to develop Building Information Modeling (BIM) software solutions for industry partners.
- Presented my work at industry meetings and as poster presentations.

## **Undergraduate Teaching Assistant (BSc)**

Sept/2015 – Dec/2015

### **Department of Computing Science, University of Alberta, Canada - CMPUT 340: Numerical Methods**

- Marked written assignments and helped students with course questions.

## **Data Analyst**

Aug/2014 – Apr/2015

### **Department of Obstetrics and Gynecology, University of Alberta, Canada**

- Entered medical research data into REDCap database.
- Conducted statistical data analysis for women's health research.

**Various other jobs:** Retail Clerk at Snow Valley Ski Club, Ramp Agent at Airport Terminal Services at the Edmonton International Airport, Windshield Installer at Glassmasters Autoglass Ltd., and Cook at Famoso Pizzeria.

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## **Scholarships/Recognitions:**

Alberta Graduate Excellence Scholarship	2021 and 2023
FGSR Graduate Student Travel Award	2023
NSERC Postgraduate Scholarship–Doctoral (PGS-D)	2020-2023
President's Doctoral Prize of Distinction	2020-2023
DAAD Postdoc-NeT-AI - AI in Cyber Physical Systems Research Fellowship	2022
Devendra Jindal Graduate Scholarship	2021
J Gordin Kaplan Graduate Student Award	2019
University of Alberta Doctoral Recruitment Scholarship	2019
Department of Computing Science Masters Early Achievement Award – Runner Up	2018
Queen Elizabeth II Graduate Scholarship	2018
IISA 2018 Best Student Paper Award	2018
Dean's Honor Roll University of Alberta	2013 and 2014
Jason Lang Scholarship for Academic Achievement	2012, 2013, and 2014

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Rod and Judith Fraser International Undergraduate Learning Award	2013
Alexander Rutherford Scholarship	2011
German Sprachdiplom I and II (Language Proficiency Diploma)	2008

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## **Volunteer Experience:**

**CSGSA (Computing Science Graduate Students' Association) Member at Large** Apr/2020 – Apr/2021  
**University of Alberta, Canada**

- Assisted in the organization of CSGSA events and workshops.
- Discussed ongoing issues affecting computing science graduate student life and determined solutions with the executive team.
- Attended Science Graduate Students' Association Council (SGSAC) meetings.

**DITA (Dependable Internet of Things Applications) Reading Group Lead** Jan/2020 – June/2020  
- Organized reading group meetings with graduate students from universities across Canada

**GSA (Graduate Students' Association) Councilor Alternate** Apr/2019 – Aug/2019  
**University of Alberta, Canada**

- Attended GSA Council meetings on behalf of the Department of Computing Science Graduate Students' Association (CSGSA)

**C.B.A.S (Collective Body of Arts Students) Intramural Unit Manager** Sept/2014 – Apr/2016  
**University of Alberta, Canada**

- Attended unit manager meetings.
  - Signed off on intramural sports.
  - Received 2016 Intramural Conference C Champions Cup
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## **Theses:**

**Christoph Sydora.** Reasoning About Interior Building Design, Grounded on Design Rules. *PhD Thesis at the University of Alberta, Canada.* September 2024.

**Christoph Sydora.** Rule Language-Based Automated Compliance Checking for Interior Generative Design Using BIM. *Master Thesis at the University of Alberta, Canada.* September 2019.  
<https://era.library.ualberta.ca/items/161fc740-e93b-4908-879e-ed71eb944bf5>

## **Peer-Reviewed Publications:**

Faeze Momeni Rad, **Christoph Sydora** and Karim El-Basyouny. Leveraging Generative Design and Point Cloud Data to Improve Conformance to Passing Lane Layout. *Sensors.* January 2024. (Impact Factor: ~3.4)  
<https://www.mdpi.com/1424-8220/24/2/318>

**Christoph Sydora** and Eleni Stroulia. Comparative Analysis of Room Generation Methods Using Rule Language-Based Evaluation in BIM. *European Conference on Computing in Construction and International CIB W78 Conference.* Heraklion, Greece. July 2023. [https://ec-3.org/publications/conference/paper/?id=EC32023\\_237](https://ec-3.org/publications/conference/paper/?id=EC32023_237)

**Christoph Sydora**, Faiza Nawaz, Leepakshi Bindra, and Eleni Stroulia. Building Occupancy Simulation and Analysis under Virus Scenarios. *ACM Transactions on Spatial Algorithms and Systems: Special Issue on Understanding the Spread of COVID-19.* January 2022. (Impact Factor: 1.9) <https://dl.acm.org/doi/10.1145/3486898>

**Christoph Sydora** and Eleni Stroulia. BIM-kit: An Extendible Toolkit for Reasoning about Building Information Models. *European Conference on Computing in Construction.* Online. July 2021. <https://ec-3.org/publications/conferences/2021/paper/?id=186>

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**Christoph Sydora** and Eleni Stroulia. Rule-Based Compliance Checking and Generative Design for Building Interiors Using BIM. *Automation in Construction*. December 2020. (Impact Factor: 9.6)  
[https://www.sciencedirect.com/science/article/pii/S0926580520309481?casa\\_token=ExhTcvbZMBkAAAAA:3oW5mpNdwg3kr0Vw3xnLvVUIW6Z53NnJ6fU0ZR VetvP5-hpkuW1IrOPZw3EBhex2gGbX9BIGEw](https://www.sciencedirect.com/science/article/pii/S0926580520309481?casa_token=ExhTcvbZMBkAAAAA:3oW5mpNdwg3kr0Vw3xnLvVUIW6Z53NnJ6fU0ZR VetvP5-hpkuW1IrOPZw3EBhex2gGbX9BIGEw)

**Christoph Sydora**, Ming-Fung Francis Siu, Zhen Lei, SangHyeok Han, and Ulrich Hermann. Critical Lifting Simulation of Heavy Industrial Construction in Gaming Environment. *Facilities: Smart City Facilities and their Management*. June 2020. (Impact Factor: ~2.2) [https://www.emerald.com/insight/content/doi/10.1108/F-08-2019-0088/full/html?casa\\_token=z2GommZj4BcAAAAA:EEiCBJCY94FLHyOhOovv1r4qd2gAHBvci-FP\\_ZQUOdu-aWGF\\_CYacdJbzZqI8XarRKgjGY0eHKPqvytbI209imClnR\\_UnfKV9-IW\\_2FSsKczwlWp8BU](https://www.emerald.com/insight/content/doi/10.1108/F-08-2019-0088/full/html?casa_token=z2GommZj4BcAAAAA:EEiCBJCY94FLHyOhOovv1r4qd2gAHBvci-FP_ZQUOdu-aWGF_CYacdJbzZqI8XarRKgjGY0eHKPqvytbI209imClnR_UnfKV9-IW_2FSsKczwlWp8BU)

**Christoph Sydora**, Johannes Jung, and Ioanis Nikolaidis. A Study of Simple Partially-Recovered Sensor Data Imputation Methods. *15th International Conference on Network and Service Management (CNSM)*. Halifax, Canada. October 2019. [https://ieeexplore.ieee.org/abstract/document/9012748?casa\\_token=MyVuZA81fVQAAAAA:4W-kTsvq1D-uxCSVUk\\_tPJTRm65P24EJuHUNGmcWpWmTGXPEIVW-VbNy5rbLpfhzTayDOfC](https://ieeexplore.ieee.org/abstract/document/9012748?casa_token=MyVuZA81fVQAAAAA:4W-kTsvq1D-uxCSVUk_tPJTRm65P24EJuHUNGmcWpWmTGXPEIVW-VbNy5rbLpfhzTayDOfC)

Hexu Liu, **Christoph Sydora**, Mohammed Sadiq Altaf, SangHyeok Han, and Mohamed Al-Hussein. Towards sustainable construction: BIM-enabled design and planning of roof sheathing installation for prefabricated buildings. *Journal of Cleaner Production*. July 2019. (Impact Factor: 9.7)  
[https://www.sciencedirect.com/science/article/pii/S0959652619323947?casa\\_token=OEYr0VENzIsAAAAA:K2bKanajx9Ja\\_XIZqMeT8i7EpY6Mpi42QsKUAf4nbzAp4KrwrvVhPeaCa8WmuLQIAW2qZnDLPg](https://www.sciencedirect.com/science/article/pii/S0959652619323947?casa_token=OEYr0VENzIsAAAAA:K2bKanajx9Ja_XIZqMeT8i7EpY6Mpi42QsKUAf4nbzAp4KrwrvVhPeaCa8WmuLQIAW2qZnDLPg)

Zhen Lei, Ming-Fung Francis Siu, **Christoph Sydora**, SangHyeok Han, and Ulrich Hermann. Prototyping for Real-time Heavy Lift Simulation using Game Engine System. *CIB World Building Congress*. Hong Kong, China. June 2019. [https://www.researchgate.net/publication/342820109\\_Prototyping\\_for\\_Real-time\\_Heavy\\_Lift\\_Simulation\\_using\\_Game\\_Engine\\_System](https://www.researchgate.net/publication/342820109_Prototyping_for_Real-time_Heavy_Lift_Simulation_using_Game_Engine_System)

**Christoph Sydora** and Eleni Stroulia. Towards Rule-Based Model Checking of Building Information Models. *36th International Symposium on Automation and Robotics in Construction (ISARC)*. Banff, Canada. May 2019.  
<https://search.proquest.com/docview/2268537612?pq-origsite=gscholar&fromopenview=true>

**Christoph Sydora** and Eleni Stroulia. Augmented Reality on Building Information Models. *International Conference on Information, Intelligence, Systems and Applications (IISA)*. Zakynthos, Greece. July 2018. (\*Received Best Student Paper Award)  
[https://ieeexplore.ieee.org/abstract/document/8633637?casa\\_token=AO34ysFcbm0AAAAA:FoLgXpp1LGZSHc1cdiMgx9x2k0BJj2dOqi7JVLebXzrsSZ2FX-1Tb10tFVSOR8TCF7hkLPA](https://ieeexplore.ieee.org/abstract/document/8633637?casa_token=AO34ysFcbm0AAAAA:FoLgXpp1LGZSHc1cdiMgx9x2k0BJj2dOqi7JVLebXzrsSZ2FX-1Tb10tFVSOR8TCF7hkLPA)

Hexu Liu, Benjamin Holmwood, **Christoph Sydora**, Gurjeet Singh, and Mohamed Al-Hussein. Optimizing Multi-Wall Panel Configuration for Panelized Construction using BIM: A Case Study. *Resilient Structures and Sustainable Construction: ISEC Conference*. Valencia, Spain. July 2017.  
[https://www.researchgate.net/profile/Hexu\\_Liu/publication/333907195\\_Optimizing\\_multi-wall\\_panel\\_configuration\\_for\\_panelized\\_construction\\_using\\_BIM/links/5d0bcac5458515c11ceadb66/Optimizing-multi-wall-panel-configuration-for-panelized-construction-using-BIM.pdf](https://www.researchgate.net/profile/Hexu_Liu/publication/333907195_Optimizing_multi-wall_panel_configuration_for_panelized_construction_using_BIM/links/5d0bcac5458515c11ceadb66/Optimizing-multi-wall-panel-configuration-for-panelized-construction-using-BIM.pdf)

Beate Sydora, Nese Yuksel, Nicole Veltri, Justin Marillier, **Christoph Sydora**, Maryna Yaskina, Lori Battochio, Tami Shandro, and Sue Ross. Patient characteristics, menopause symptoms, and care provided at an interdisciplinary menopause clinic: retrospective chart review. *Menopause*, 25(1), 102-105. June 2017. (Impact Factor: 2.673) <https://www.ingentaconnect.com/content/wk/gme/2018/00000025/00000001/art00017>

## **Peer Reviewed Poster Presentations:**

Eugene Chen, **Christoph Sydora**, Brad Burega, Anmol Mahajan, Abdullah, Matthew Gallivan, and Matthew Guzdial. Image-to-Level: Generation and Repair. *The 16th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE-20)*. Online. October 2020.  
<https://ojs.aaai.org/index.php/AIIDE/article/view/7429>

**Christoph Sydora** and Eleni Stroulia. Generative Interior Design using BIM. *The 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys)*. New York, USA.

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November 2019. [https://dl.acm.org/doi/abs/10.1145/3360322.3360997?casa\\_token=jk9Xdi2kSdQAAAAA:e3bnL4VuSG-zos\\_j9XE0uhHUd\\_NEW2MEp7v-PpVK0kg\\_Dge-NCE\\_zqaOiUhLmU7wL62NZJxEROf-](https://dl.acm.org/doi/abs/10.1145/3360322.3360997?casa_token=jk9Xdi2kSdQAAAAA:e3bnL4VuSG-zos_j9XE0uhHUd_NEW2MEp7v-PpVK0kg_Dge-NCE_zqaOiUhLmU7wL62NZJxEROf-)

Beate Sydora, Nicole Veltri, **Christoph Sydora**, Justin Marillier, Lori Battochio, Nese Yuksel, Tami Shandro, and Sue Ross. Patient characteristics and outcomes of an interdisciplinary menopause clinic: a retrospective chart review. *Maturitas*, 81(1):178-179. April 2015. [https://www.maturitas.org/article/S0378-5122\(15\)00278-9/abstract](https://www.maturitas.org/article/S0378-5122(15)00278-9/abstract)

## **Other Presentations:**

**Christoph Sydora** and Eleni Stroulia. AI for Building Design: The BIMkit Toolkit for Rule-Based Generative Design. *AI4Society Chancellor's Forum*. Edmonton, Canada. May 2022.

**Christoph Sydora**, Faiza Nawaz, Leepakshi Bindra, and Eleni Stroulia. Building Occupancy Simulation and Analysis under Virus Scenarios. *Reverse Expo*. Edmonton, Canada. February 2022.

**Christoph Sydora**, Samuel Jaeger, and Eleni Stroulia. The BIMkit Toolkit for Rule Language-Based Interior Generative Design Using BIM. *Reverse Expo*. Edmonton, Canada. February 2022.

**Christoph Sydora** and Eleni Stroulia. Rule Language-Based Automated Compliance Checking for Interior Generative Design Using BIM. *Reverse Expo*. Edmonton, Canada. February 2019.

Leepakshi Bindra, Calvin Eng, **Christoph Sydora**, Omid Ardakanian, and Eleni Stroulia. Decentralized Access Control for Smart Buildings Using Building Metadata and Smart Contract. *Reverse Expo*. Edmonton, Canada. February 2019.

Benjamin Holmwood, **Christoph Sydora**, Hexu Liu, Gurjeet Singh, and Mohamed Al-Hussein. FrameX Design and Drafting Software for Light Frame Buildings. *Modular and Offsite Construction (MOC) Summit*. Edmonton, Canada. September 2016.

Nicole Veltri, Justin Marillier, **Christoph Sydora**, Hilary Fast, Nese Yuksel, Lori Battochio, Tami Shandro, Sue J Ross, and Beate C Sydora. Health and demographics of women attending a specialized menopause clinic and treatment options provided: a chart review. *Women and Children's Health Research Institute (WCHRI) Research Day*. Edmonton, Canada. November 2014.