Christoph Sydora

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

Highlights of Qualifications:

Technical Skills:

- Source Control: Git, Subversion
- Computing languages:
  - Fluent: C#, MATLAB, SQL, Python
  - Proficient: C/C++, FORTRAN, HTML, Java, MIPS, Octave, R, Ruby, SPARQL, VB.NET
- Software: 3Ds Max, AutoCAD, Blender, MongoDB, Revit, Sketchup, SPSS, SQLite, Unity

Soft Skills:

- Strong Communicator
- Highly Organized
- Mentorship and Leadership Experience

Research Interests:

- Building Information Modeling (BIM)
- BIM automated model-checking and evaluation
- Generative building design
- Collaborative service/cloud-based BIM frameworks
- Building occupancy simulation
- Construction Scheduling and Simulation (4DBIM)
- Game engine technology for building design
- Human-Computer Interfaces (AR/VR) in design
- Construction manufacturing software application
- Smart Home Design / Digital Twins / IoT

Education:

Doctor of Philosophy (PhD) in Computing Science Jan/2020 – Sept/2024
University of Alberta, Canada (GPA: 4.000)

Master of Science (MSc) in Computing Science - Thesis Based Program Sept/2017 – Sept/2019
University of Alberta, Canada (GPA: 3.925)

Bachelor of Science (BSc) with Specialization in Computing Science - Science Internship Program Sept/2011 – Dec/2016
University of Alberta, Canada (GPA: 3.433)

University Study Abroad Mar/2014 – June/2014
University of Sydney, Australia

Selected Work Experience:

Postdoctoral Fellow (PDF) Oct/2024 – Current
Department of Computing Science, University of Alberta, Canada

- Researching and publishing BIM related projects
- Mentoring graduate students in Computing Science. Specifically on 4D BIM tools and construction schedule visualization

Data Scientist Dec/2024 – Mar/2025
PCL Construction Management Inc., Edmonton Alberta, Canada

- Working on problems relating to electrical cable routing optimization in large industrial sites. Specifically relating to routing guidelines rule compliance.
- Work was done in Blender API using Bonsai (formerly BlenderBIM)

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Graduate Research Assistant (PhD) May/2020 – Sept/2024
Department of Computing Science, University of Alberta, Canada
- Worked on thesis-related projects and publishing results. Thesis focused on learning design rules through compliant examples using an intermediate rule domain specific language.
- Creating and carrying out user studies and surveys to collect models and data for rule learning projects.
- Assisted fellow students in the lab with projects such as BIM to RDF converters and BIM VR tools.
- Mentored summer undergraduate students in Computing Science.
- Completed course work and published course projects results such as game level generation using images.

Graduate Teaching Assistant (PhD) Sept/2021 – Dec/2021, Sept/2022 – Dec/2022, Sept/2023 – Dec/2023
Department of Computing Science, University of Alberta, Canada - CMPUT 312: Robotics and Mechatronics
- Organized and hosted lab sessions on mobile and arm robotics relating to automated movement, sensing, and control.
- Marked assignments and exams and helped students with course projects.

Graduate Teaching Assistant (PhD) Jan/2020 – Apr/2020, Sept/2020 – Dec/2020
Department of Computing Science, University of Alberta, Canada - CMPUT 296: Games AI
- Hosted lab/seminar sessions on game AI mechanics and procedural level generation and held weekly office hours.
- 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. Thesis focused on developing a interior design rule domain specific language.
- Served as a client for CMPUT 401: Software Process and Product Management, providing guidance and project specification for course projects.
- Supervised undergraduate internship students in both Computing Science and Civil Engineering labs building software applications for modular construction and automated model rule checking.
- Completed course work and published course projects results such as work on missing data imputation for wireless sensor networks and automated home battery control optimization.

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 on numerical methods topics such as image/video interpolation, Newtons/Broydens Methods, PCA, LU factorization.
- 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 specifically for crane heavy lift simulation and testing and optimization of roof sheathing cutting and placement.
- 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 modular construction wall manufacturing machines. Developed automated framing addon in Revit C# API including automated shop drawing generation, multi-wall optimization, and CNC code generation.
- 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.

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

Volunteer Experience:

Peer Reviewer for Academic Journals: Ongoing
- Automation in Construction: 1 Review
- Advanced Engineering Informatics: 1 Review

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

Theses:

Christoph Sydora. Reasoning About Interior Building Design, Grounded on Design Rules. *PhD Thesis at the University of Alberta, Canada*. September 2024.
https://era.library.ualberta.ca/items/a835aa29-623f-4e27-8dd8-80dfd790e038

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:

Christoph Sydora and Eleni Stroulia. Learning Interior Design Rules from User-Created Layout Examples. *European Conference on Computing in Construction and International CIB W78 Conference*. Porto, Portugal. July 2025.

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

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

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:3oW5mpNdwg3kr0Vw3xnLvVUIW6Z53NnJ6fU0ZRVetvP5-hpkuW1IrOPZw3EBhex2gGbX9BlGEw

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

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_tPJTRm65P24EJuHUNGmcWpWmTGXPElVW-_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=OEYr0VEnzlsAAAAA: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

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-1Tb10tFVSOR8TCF7hkLPAn

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

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. November 2019. https://dl.acm.org/doi/abs/10.1145/3360322.3360997?casa_token=jk9Xdi2kSdQAAAAA:e3bnL4VuSG-zos_j9XEOuhHUd_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

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, Kalvin 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.