Dominic Le

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Research Interests	Computational Cognitive Modelling, Counterfactuals, Causal Reasoning, Bayesian Learning, Cognitive Developement, Philosophy of Language, Philosophy of Science.

Education   Faculty of Arts and Science, University of Toronto,   2022 - 2026
Planned H.B.Sc. in Cognitive Science (Computational Cognition) and Psychology.

Research Projects

Knowledge Representation as a Unified Model of Counterfactual Reasoning   Sep 2024 –
Advisor: Can Mekik, University of Toronto.
Department of Psychology

- Implemented a computational model within the Clarion cognitive architecture in Python based on a novel theoretical framework for counterfactual reasoning.
- Conducted simulations to test the model and compared the results with findings from previous studies.

Backwards Counterfactual Reasoning   Sep 2024 –
Advisor: Ioana Grosu & Patricia Ganea, University of Toronto.   *Independent Study*
Department of Applied Psychology and Human Development.

- Developed experimental designs, crafted materials, and put them together for participant experience using Qualtrics.
- Recruited participants using Amazon Mechanical Turk and Lookit.
- Performed statistical analysis using Generalized Linear Models (GLM) and Generalized Estimating Equations (GEE) in R.

Stacks of Structural Causal Models   Aug 2024 –Sep 2024
Advisor: Sara Aronowitz, University of Toronto.   *Independent Study*
Department of Philosophy

- Conducted a comprehensive literature review across philosophy and cognitive science to identify limitations in existing Bayesian models of counterfactual thought.
- Developed a novel cognitive framework integrating structural causal models with recurrent counterfactual reasoning, addressing gaps in current cognitive theories.
- Authored a detailed thesis proposing the novel framework.

Conferences & Presentations

Dominic Le (2025). *Causal Stacks: A Structural Framework for Recurrent and Hierarchical Counterfactual Reasoning.* Poster accepted for presentation at the 5th European Experimental Philosophy Conference, Norwich, UK; the Society for Philosophy and Psychology (SPP) Annual Meeting; and the Annual Meeting of the Cognitive Science Society (CogSci).

Ioana Grosu, **Dominic Le**, & Patricia Ganea (2025, July). *Backwards Counterfactuals and the Closest Possible World.* Paper accepted for oral presentation to CogSci 2025, San Francisco, CA.

Ioana Grosu, **Dominic Le**, & Patricia Ganea (2025, June). *Changes to Models of Reality in Backwards Counterfactual Reasoning.* Poster accepted for presentation The 51st Annual Meeting of the Society for Philosophy and Psychology (SPP 2025), Ithaca, NY.

Dominic Le, Ioana Grosu, & Patricia Ganea (2025, February). *Time's Asymmetry in Counterfactuals.* Paper presented at the Cognitive Science and Artificial Intelligence Student Association (CASA) Undergraduate Conference, Toronto, ON.

Dominic Le (2024, September). *Modeling Children's Development of Modal Thought.* Talk presented at the Collective Undergraduate Research (CURE) Flash Talks, Toronto, ON.

Dominic Le, Oksana Tkachman (2024, March). *Spatial Frames of Reference in Signed Languages.* Paper presented at the Western Interdisciplinary Student Symposium on Language Research (WISSLR), London, ON.

Working Papers	Ioana Grosu, **Dominic Le**, Patricia Ganea (2025). *Backwards Counterfactuals and the Closest Possible World.*

Labwork

Research Assistant, Cognitive Development   Jan 2024 –
Supervisor: Ioana Grosu & Patricia Ganea, University of Toronto
Language & Learning Lab
- Recruited and tested children from ages 5-7 in-person for behavioural experiments.
- Recorded and edited audio/video using Canva and Adobe Premiere materials for experimental stimuli.
- Coded recordings from testing trials.

Research Assistant, Psycholinguistics   Mar 2023 –Sep 2024
Supervisor: Oksana Tkachman, University of British Columbia
Language & Learning Lab
- Coded signed language signs from a database for their reference frames and spatial relations.
- Contributed to weekly meetings to troubleshoot a novel spatial framework in coordination with PI and peers based on inconsistent coding data.

Research Assistant, Morality and Abnormal Psychology Nov 2023 –Jun 2024
Supervisor: Mark Miller, University of Toronto
Consciousness & Wisdom Studies Lab
- Categorized and annotated bibliography for a literature review for SSHRC Insight Grant proposal.

Previous Employment

Child's Program Assistant, UofT Family Housing   Jun 2024–Aug 2024
- Designed and coordinated community-based children's programs and services for the UofT Family Housing community, i.e. French Cultural Enrichment Program, STEAM day, and Music day.
- Compiled a material list for the supervisor when creating new programs.
- Consistently and effectively communicated with parents/caregivers and teams.

Supported Child Care Worker, BGC Canada   Jun 2023–Sep 2023
- Actively attended to social/recreational needs of 5-12 year-olds and their families.
- Responsibly fostered one-on-one support with children who have special needs.
- Keep track of statistics and ensure that documentation is accurate and complete (e.g., incident reports, daily log sheets, member systems, etc.).

Camp Supervisor/Flight Sergeant, Cadets Canada   Jun 2022–Aug 2022

- Planned camp's daily schedule to fulfill citizenship lessons, physical activity, and opportunities exploration aims.
- Supervised and mentored sergeants as they led jr. cadets through daily activities.

Relevant Coursework	Programming & Computer Science:	Seminar on Cognitive Architectures: Python
	Data, Computation, and the Mind: Python	Intro to A.I.: Python
	Software Design: Java	Intro to Computer Programming: Python
	Psychology & Cognitive Science:	Minds and Machines
	Behavioural Neuroscience	Intro to Semantics
	Sensation and Perception	Intro to Cognitive Science
	Intro to Philosophy: Knowledge and Reality	Intro to Psychology
	Intro to Developmental Psychology	Intro to Cognitive Psychology
	Statistics & Mathematics:	Treatment of Psychological Data: R
	Experimental Design and Theory: R	Math Expres. and Reas. in Computer Science
	Psychology Statistics II: JASP	Probability and Statistics II: R
	Probability and Statistics I: R	Multivariable Calculus with Proofs
	Linear Algebra I	Calculus with Proofs

Student Affiliations	**Executive Secretary,** CASA - CogSci and A.I. Student Association	Sep 2024 –
	CogSci Course Union Representative, University College Council	Sep 2024 –
	Junior Editor, Mentis - UofT Cognitive Science Undergraduate Journal	Feb 2024 –
	Staff Writer, Demo Magazine - Hart House Music Publication	Sep 2023 –

Recognitions	($7500) University of Toronto Excellence Award (UTEA-SSH)	2025
	(Priceless) UofT MAT237 Meme Contest Nominee. 2x	2024
	($2000) Gyro Club of Nanaimo Jack Ryan Scholarship.	2022
	($1250) B.C. District/Authority Scholarship.	2022
	($1250) B.C. Excellence Scholarship.	2022
	($2000) Vancouver Island University Dual Enrollment Scholarship.	2021

Skills and Characteristics	Natural Languages:	Fluent: English, French. Rudimentary: Vietnamese.
	Computer Languages:	Proficient: R, Python, Java, HTML/CSS Rudimentary: JavaScript, C#, C++.
	Certifications:	Standard First Aid - with CPR-C-AED (St. John Ambulance till 2026), Responsible Adult (YMCA, 2023)
	Software Tools:	Document-preparation: MS Office, LaTeX (Overleaf/VSCode), Google Workspace. Data-collection: Qualtrics, MTurk, Lookit, REDCap. Data-processing: RStudio, Pandas+NumPy (VSCode/PyCharm), JASP. Image-manipulation: Photoshop, Canva Audio-editing: Ableton Live, Logic, Audacity. Video-editing: Premiere, Final Cut, Animate. Workflow-related: Git, Obsidian, Zotero, Slack.
	Outside Interests:	Guitar pedals/audio effects, comedy writing, songwriting, role-playing games.