

# Edward Lee

Computer Science  
University of Waterloo  
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## Publications

Brachthäuser, Jonathan Immanuel, Schuster, Philipp, Lee, Edward and Boruch-Gruszecki, Aleksander. **Effects, Capabilities, and Boxes: From Scope-based Reasoning to Type-based Reasoning and Back.** *To appear: OOPSLA 2022.*

Odersky, Martin, Boruch-Gruszecki, Aleksander, Brachthäuser, Jonathan Immanuel, Lee, Edward, and Lhotak, Ondrej. **Safer exceptions for Scala.** SCALA 2021: pp 1-11. 10 pages.

Roegiest, Adam and Lee, Edward. **On Tradeoffs Between Document Signature Methods for A Legal Due Diligence Corpus.** 42nd Int. ACM SIGIR Conf. on Research and Development in Information Retrieval: pp 1001–1004. 4 pages.

Georgiou, Konstantinos, Lee, Edward et al. **Lift and Project Systems Performing on the Partial Vertex Cover Polytope.** Submitted to Theoretical Computer Science A. Accepted July 2019.

Geelen, Jim and Lee, Edward. **Naji's characterization of circle graphs.** Submitted to the Journal of Graph Theory, submission number JGT-18-181. 15 pages. Accepted April 2019.

Georgiou, Konstantinos and Lee, Edward. **Lift and Project Systems Performing on the Partial Vertex Cover Polytope.** 34th Int. Conf. on the Foundations of Software Technology and Theoretical Computer Science: pp 199–211. 13 pages.

## Talks Given

- July 2017 **Recognizing Circle Graphs**, CANADAM 2017, Ryerson University, Toronto ON.  
March 2017 **Circle Graph Obstructions**, *Graphs @ Ryerson*, Ryerson University, Toronto ON.

## Teaching

- Instructor School of Computer Science, University of Waterloo  
Fall 2022 – 2 sections of CS 246, Object Oriented Software Development  
Spring 2022 – 1 section of CS 241, Foundations of Sequential Programs  
Fall 2021 – 1 section of CS241E, Foundations of Sequential Programs (Enriched)
- TA School of Computer Science, University of Waterloo  
CS 136, CS 146, CS 241/241E, CS 246E, CS444
- TA Department of Combinatorics and Optimization, University of Waterloo  
CO 331, CO 370, CO 602, CO 446/646

## Education

- 2020– **PhD**, *Computer Science*, University of Waterloo, Waterloo, ON, supervised by Ondrej Lhotak.  
**Topic:** Effects and capabilities in Scala

- 2015–2017 **Master's of Mathematics**, *Combinatorics and Optimization*, University of Waterloo, Waterloo, ON, supervised by James Geelen.  
**Topic:** Structural characterizations of circle graphs.
- 2010–2015 **Bachelor's of Mathematics**, *University of Waterloo*, Waterloo, ON, *89.8% average*.  
Double Honours in Computer Science and Combinatorics and Optimization.

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## Scholarships and Awards

- 2023 **Ontario Graduate Scholarship**.  
**Value:** \$15,000
- 2020–2023 **NSERC Postgraduate Scholarship – Doctoral**.  
**Value:** \$63,000
- 2020–2024 **President's Graduate Scholarship**.  
**Value:** \$45,000
- 2020–2022 **David R. Cheriton Graduate Scholarship**.  
**Value:** \$20,000
- 2016–2017 **NSERC Canada Graduate Scholarship – Master's**.  
**Value:** \$17,500
- 2015–2016 **Ontario Graduate Scholarship**.  
**Value:** \$15,000
- 2015–2017 **President's Graduate Scholarship**.  
**Value:** \$20,000
- Fall 2014, **NSERC Undergraduate Student Research Award**.  
Winter 2013, **Value:** 3 × \$4,500  
Spring 2011

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## Work Experience

- October 2017 **Software Developer**, *Kira Systems*, Toronto, ON.  
– December 2019
  - Designed and implemented a performance testing framework for various web services.
  - Jointly designed and implemented with Kira's research team a new service for grouping documents based on their semantic similarity.
  - Developed a parallel build system for our software, speeding up our CI builds by a factor of 300%.
  - Optimized the core ML algorithms that Kira used, reducing both memory usage and time spent training new models by a significant factor.
- May 2013 – **Software Developer**, *School of Computer Science, University of Waterloo*, Waterloo, ON.
- August 2017
  - Part-time lead developer on a web-based C/Racket teaching and development environment for students; source available at <https://github.com/cs136/seashell>.
- January 2013 **Software Engineering Intern**, *Google Kitchener*, Kitchener, ON.  
– April 2013
  - Helped implement a new storage system for the Ads Experiments group.