

Alexi Turcotte

Northeastern University

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Education

- 2018-Date **PhD in Computer Science**, *Northeastern University, Boston, MA, USA.*
Advised by Jan Vitek.
Currently working on an analysis of polymorphicity in R, trying to build a clear picture of how programmers use type information in the language.
- 2016-2018 **MMath in Computer Science**, *University of Waterloo, Waterloo, Ontario, Canada.*
Advised by Gregor Richards.
Thesis: *Reasoning About FFIs: Blame and Nondeterministic Formal Semantics.*
Formulated a scheme to define formal semantics for languages interoperating using foreign function interfaces (FFIs) without modelling the foreign language. Proved results akin to the “gradual guarantee” from gradual typing.
- 2012-2016 **BSc Math and Computer Science**, *Laurentian University, Sudbury, Ontario, Canada.*
Advised by Hafida Boudjellaba.
Thesis: *Optimal Parameters for Predator-Prey Models.*
Developed a method to estimate parameters for a Lotka-Volterra predator-prey model and fit one to a data set. Evaluated method on existing and contrived data.

Experience

- 2019 **Research Intern**, *Oracle Labs, Switzerland.*
TBD.
- 2015 **Software Developer**, *AdvanceWorx Canada.*
Developed a few iOS apps which interfaced with the FLIR One thermal camera, notably an app for adjusting visualizations of thermal video and images.
- 2015 **Research Assistant**, *Laurentian University.*
Wrote front-end and data processing code to assist Dr. Francois Caron’s lab in using the DOMFLuor MATLAB package.
- 2014 **UCOSP: Umple (Model-Oriented Programming)**, *University of Ottawa.*
Umple is a UML-to-source compiler. Implemented the UML specialization feature in the Umple compiler and UmpleOnline interface.
- 2014 **Research Assistant (Statistics and Data Analysis)**, *Laurentian University.*
Worked on some small projects with Dr. Hafida Boudjellaba, notably on correlation analysis between actual and imaged (with 3D medical imaging device) operated area for tumor removal procedure.
- 2014 **Researcher**, *DreamStar.*
Developed and implemented algorithm to detect REM cycles through heart rate data. Involved data normalization, noise reduction, and testing against EEG sleep cycle data.
- 2013-2018 **Teaching Assistant**, *Laurentian University and University of Waterloo.*
Marking and running labs and tutorials for a variety of courses, including 3rd year algorithms (CS341) at Waterloo, and 3rd year theory of computation (COSC3106) at Laurentian.

Papers

- 2019 Alexi Turcotte, Ellen Arteca, and Gregor Richards. *Reasoning About Foreign Function Interfaces Without Modelling the Foreign Language.* ECOOP.

- arXiv, 2019 Ahmad Biniiaz, Kshitij Jain, Anna Lubiw, Zuzana Masárová, Tillmann Miltzow, Debajyoti Mondal, Anurag Murty Naredla, Josef Tkadlec, Alexi Turcotte. *Token Swapping on Trees*.
- 2018 Therese Biedl, Ahmad Biniiaz, Veronika Irvine, Philipp Kindermann, Anurag Murty Naredla, and Alexi Turcotte. *Integral Unit Bar-Visibility Graphs*. Canadian Conference on Computational Geometry (CCCG).
- 2018 Therese Biedl, Martin Derka, Veronika Irvine, Anna Lubiw, Debajyoti Mondal, and Alexi Turcotte. *Partitioning Orthogonal Histograms into Rectangular Boxes*. LATIN, the Latin American Theoretical INformatics Symposium.
- 2017 Gregor Richards, Ellen Arteca, and Alexi Turcotte. *The VM Already Knew That: Leveraging Compile-Time Knowledge to Optimize Gradual Typing*. Proceedings of the ACM on Programming Languages, OOPSLA.

Posters

- 2017 Alexi Turcotte and Ellen Arteca. *Multi-Objective Root Growth Optimization*. Poster session at the EQuALS Conference.
- 2017 Ellen Arteca and Alexi Turcotte. *Modified Constrained Blind Amplitude Reconstruction*. Poster session at the EQuALS Conference.

Professional Development and Community Service

- 2019 OOPSLA Artifact Evaluation Committee
- 2018-2019 Curriculum Committee for the College of Computer and Information Science at Northeastern
- 2018 ECOOP Summer School
- 2017 Programming Languages Implementation Summer School (PLISS)

Languages

- Programming Java, C, C++, C#, Objective C, Swift, Python, R, MATLAB/Octave, Coq, TypeScript and JavaScript, Racket
- Native English (Fluent), French (Fluent)

Misc

- Github reallyTG
- Citizenship Canada
- Hackathons I like them, my team placed top 5 in the Great Canadian Appathon 4 (a gamejam) and won "Most Innovative Game"!
- NSERC Currently holding an NSERC PGS-D Scholarship