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Ellen Arteca

Education

2018–date **PhD in Computer Science**, *Northeastern University*, Boston, USA.
Current work: Program Analysis for JavaScript optimization and/or refactoring; test generation
Supervised by Dr. Frank Tip

2016–2018 **MMath in Computer Science**, *University of Waterloo*, Waterloo, Canada.
Thesis: Formal Semantics and Mechanized Soundness Proof for Fast Gradually Typed JavaScript
Supervised by Dr. Gregor Richards

2012–2016 **Bachelor's of Computer Science, Major in Mathematics**, *Laurentian University*, Sudbury, Canada.
Thesis: Modular Algorithms for Computation of Groebner Bases
Supervised by Dr. Stephanie Czapor

Relevant Professional Experience

Summer 2019 **Research Engineer Intern**, *GitHub (Semmle)*.
- Static analysis for bug detection in use of event-driven APIs in JavaScript
  - Building a model of the API through large-scale analysis of package use
  - Automatically determining incorrect event listener registrations

Fall 2014 **UCOSP: Umple Model-Oriented Programming**, *University of Ottawa*.
- Implementation of UML compositions in Umple compiler and addition to UmpleOnline interface

Summer 2014 **Research Assistant (USRA)**, *Laurentian University*, Funded by NSERC.
- Modelling in computational physics, simulating particle interaction dynamics in large enclosed systems

2013–2016 **Research Assistant**, *Laurentian University*.
- Modelling in computational ecology, simulating fruit fly populations under variable environmental conditions
  - Numerical approximations for populations as systems of coupled DEs
  - Multithreading in Java and C++
  - Large-scale data storage and analysis

2013-2019 **Teaching Assistant**.
- Marking and running tutorials for a variety of computer science and math courses

Publications

In submission Arteca, Ellen, Frank Tip, Max Schäfer. *Reducing Over-Synchronization in JavaScript Applications*. ECOOP 2021 European Conference on Object-Oriented Programming, 2021.

In revisions Arteca, Ellen, Max Schäfer, Frank Tip. *Learning How to Listen: Automatically Finding Bug Patterns in Event-Driven JavaScript APIs*. ACM Transactions on Software Engineering and Methodology (TOSEM).

2019 Turcotte, Alexi, Ellen Arteca, and Gregor Richards. *Reasoning About Foreign Function Interfaces Without Modelling the Foreign Language*. ECOOP 2019 European Conference on Object-Oriented Programming, 2019.

2017 Richards, Gregor, 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 (2017).

2017 Langille, Aaron, Ellen Arteca, and Jonathan Newman. *The impacts of climate change on the abundance and distribution of the Spotted Wing Drosophila (Drosophila suzukii) in the United States and Canada.* PeerJ 5 (2017).

2016 Langille, Aaron, Ellen Arteca, Geraldine Ryan, Lisa Emiljanowicz, and Jonathan Newman. *North American invasion of Spotted-Wing Drosophila (Drosophila suzukii): a mechanistic model of population dynamics.* Ecological Modelling (2016).

Posters

2017 Arteca, Ellen and Alexi Turcotte. *Modified Constrained Blind Amplitude Reconstruction*. Poster session presented at the EQuALS Conference (May 2017).

2017 Turcotte, Alexi and Ellen Arteca. *Multiobjective Root Growth Optimization.* Poster session presented at the EQuALS conference (May 2017).

Professional Development

2020 ISSTA Artifact Evaluation Committee

2020 ECOOP Artifact Evaluation Committee

2019 PhD Curriculum Committee, Northeastern University

2018 ECOOP Summer School

2017 Programming Languages Implementation Summer School (audit)

Languages

Programming Typescript/Javascript, CodeQL, Python (with matplotlib, numpy, pandas), Java, C++, C, Matlab/Octave, Maple, Coq, Racket

Natural English (native), Spanish (fluent), French (fluent)

Misc

Github/ bitbucket emarteca

Citizenship Canadian

Hackathons A variety of game design hackathons during undergrad!

NSERC Currently holding the NSERC PGS-D scholarship