

# Amin Bandali

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## Education

Master of Mathematics (Computer Science) | 2018–present

*University of Waterloo, Canada*

Supervised by Dr. Nancy Day | GPA: 3.7/4.0 | Expected completion: December 2019

Research focusing on formal logic, model checking, and verification.

B.Sc. Honours Computer Science | 2013–2017

*York University, Toronto, Canada*

GPA: 7.84/9.0

Relevant courses: System Specification & Refinement, Software Requirements Eng., Software Design, Operating Systems, Computational Complexity, Design & Analysis of Algorithms.

Finished first year (2013-14) at *Carleton University* with a GPA of 11.0/12.0, then transferred to *York University* in Fall 2014.

## Publications

### MoDRE 2018

A Comparison of the Declarative Modelling Languages B, Dash, and TLA<sup>+</sup> (pdf, bib)

Ali Abbassi, Amin Bandali, Nancy A. Day, and Jose Serna

*2018 IEEE 8th International Model-Driven Requirements Engineering Workshop (MoDRE)*

## Work & Research Experience

Cheriton School of Computer Science, University of Waterloo | 2018–present

*Teaching Assistant*

I was a TA for SE 212, Logic and Computation, taught by Dr. Day in Fall 2018.

I was a TA for SE 463, Software Requirements Specification and Analysis, taught by Prof. Atlee.

I was a TA for CS 136, Elementary Algorithm Design and Data Abstraction.

EECS Department, York University | fall 2017

*Teaching Assistant*

I was a TA for EECS 1012, Net-Centric Introduction to Computing, taught by Dr. Brown.

Software Engineering Lab, York University | summer 2017

*Research Assistant*

I worked on an implementation of *Lampsort* in Eiffel. I also extended the `mathmodels` library, implementing a `RATIONAL` class for working with arbitrarily large rational numbers.

Software Engineering Lab, York University | summer 2016

*Research Student*

As an undergraduate research student, I worked on *Literate Unit-B*, the verifier for Unit-B, a new formal method focused on formal verification of reactive, concurrent and distributed systems.

From the Literate Unit-B codebase (written in Haskell), I decoupled the logic module and used it to build *Unit-B Web*, a web interface using Literate Unit-B to do predicate calculus proofs. Unit-B Web, also written in Haskell, supports the  $\text{\LaTeX}$  syntax of the Unit-B logic, renders user input on the page, and calls the sequent prover of the logic module, which uses the `Z3 SMT` solver to check the validity of user input.

Further, I separated Literate Unit-B's type checker from its parser, allowing easier substitution of other type checking algorithms and in preparation for implementing subtyping.

## Conference Presentations

### CUCSC 2017

The Magic of Specifications and Type Systems (slides), at Canadian Undergraduate Computer Science Conference, University of Toronto, Canada, Jun 15–17 2017.

### Lassonde USSR Conference 2017

The Magic of Specifications and Type Systems (poster), at Lassonde Undergraduate Summer Student Research Conference, York University, Toronto, Canada, August 15, 2017.

## Professional Experience

Lotek Wireless Inc., Newmarket, Canada | summer 2015 & 2016

*Software Developer*

Designed and implemented various applications in C# and C to test and analyze a satellite pass prediction algorithm for predicting the pass windows of Argos satellites, for scheduling send times of data collected by company's wildlife tracking products.

Designed and developed an Employee Portal web application in C# and the MVC framework, used by employees for accessing various data catalogs and archives.

Athlete Builder, Ottawa, Canada | 2013–2014

*Software Developer*

Developed the Backend of Athlete Builder platform in C# and MVC.

Was a key role in development of the platform core.

Developed the alpha version of Athlete Builder Android app in Java.

## Volunteer Activities

EmacsConf 2015, emacsconf.org | summer 2015

*Organizer*

EmacsConf is a conference about the joy of Emacs and writing Emacs Lisp. I was a key organizer and in charge of setting up and maintaining several vital pieces of the EmacsConf infrastructure.

VONICAL Inc., Ottawa, Canada | spring 2013

*Application Developer*

As a volunteer, worked on development of EARN (Employment Accessibility Resource Network) portal using the Anahita social networking platform, in PHP under Linux.

Hire Works Inc., Ottawa, Canada | winter 2013

*Mobile & Web Developer*

As a volunteer, I worked on a variety of web and mobile projects for Hire Works, Inc.

St. Brigid's Summer Camp, Ottawa, Canada | summer 2012

*Web Developer*

As a volunteer, I re-designed and coded (from scratch) an updated and revamped version of the photo gallery section of St. Brigid Summer Camp's website in PHP and JavaScript. A refactored version of my code is deployed and being used.

## Recent Projects

*Unit-B Web*: The web interface for Unit-B, as mentioned in the *Research Experience* section.

Source code available at <https://github.com/unitb/unitb-web>

*tex2png-hs*: A tool for easily converting  $\text{T}_{\text{E}}\text{X}$  and  $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$  to PNG images. `tex2png-hs` is a Haskell port of Xyne's `tex2png` tool. It is a wrapper around `latex` and `dvipng` and provides several options for modifying its behaviour, such as cropping the whitespace around the content, specifying the DPI, or inputting a full document. Source code available at <https://github.com/unitb/tex2png-hs>

For more projects, visit my personal site at <https://bandali.eu.org>.

## Miscellaneous

*Programming Languages:* Haskell, Rust, Eiffel, Python, C, Emacs Lisp, C#, JavaScript.

*Tools:* Emacs, Liquid Haskell, Git, Zsh, L<sup>A</sup>T<sub>E</sub>X, CI Systems (e.g. Travis CI), Rodin.

*Platforms:* Arch Linux, Ubuntu and other distros, Android, macOS, Windows.

*Languages:* Persian (mother tongue), English (fluent), French (beginner).

Last updated: May 7, 2019