

# Mark Armstrong

Software Engineer, M.Sc. Computer Science

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## Employment

Software Engineer      Index Exchange, Toronto ON, Sept 2021 - Sept 2024

- Worked on the core application API team, developing APIs in Go.
  - Focus on user/account management, authentication and authorization.
  - Incorporated technologies including Ansible and Redis.
- Practiced DevOps using Docker, Kubernetes, Helm, GitLab CI/CD and ArgoCD.

Sessional faculty      McMaster University, Hamilton ON, 2013 - Dec 2020

- 5 appointments for teaching “Principles of Programming Languages”.
- Planned and prepared lecture materials and assignments/tests including both written and programming evaluations.
- Supervised teaching assistants.

Teaching assistant      McMaster University, Hamilton ON, 2013 - Apr 2021

- 15 appointments, primarily to courses on programming language theory and discrete mathematics.
- Prepared and led tutorial sessions and office hours, marked student work.
- In some instances, appointed to supervise other teaching assistants.

Research assistant      McMaster University, Hamilton ON, Summers 2010 and 2012

- Independently researched on topics selected by supervising professors.

Embedded Systems Test Dev, Intern Blackberry, Mississauga ON, May 2011 - Aug 2012

- Developed automated tests and test systems for Blackberry GPS systems.

## Education

Ph.D. in Computer Science (inc)      McMaster University, Hamilton ON, 2015 - 2022

- Coursework and comprehensive exams completed. Thesis not completed.
- Mechanising models of computability using automated proof assistants.
- 3<sup>rd</sup> place in 2019 McMaster Computing and Software poster competition.
- GPA: 11.75 on 12 point scale.

M.Sc. in Computer Science      McMaster University, Hamilton ON, 2013 - 2015

- Investigated classical computability results in context of computability over real numbers.
- GPA: 11.75 on 12 point scale. Graduated with distinction.

B.A.Sc. in Computer Science      McMaster University, Hamilton ON, 2008 - 2013

- Summer 2010 research project on (theoretical) models of concurrency.
- Summer 2013 research project on mechanising mathematical knowledge.
- GPA: 11.1 on 12 point scale. Graduated with distinction.

## Objectives

- Put my backend, DevOps experience to use building interesting, meaningful software.
- Work with excellent people, in a culture fostering learning, teaching and growth.
- Learn new languages, tools, and patterns.
- Take opportunities, either professional or personal, to contribute back to open source projects.

## Skills

### Programming

- **Expert** Go, Agda, Emacs lisp
- **Experienced** C, Python, Shell script
- **Familiar** Elm, Haskell, SML, Ruby, Prolog, Scala

### Other software proficiencies

Docker, LXD, Kubernetes, Helm, GitLab CI/CD, ArgoCD, Ansible, Redis, Keycloak, Linux, Emacs, Org mode,  $\text{\LaTeX}$

### Soft skills

- Teaching and mentoring
- Literate programming
- Mental health support

### Teachables

- Principles of programming languages/programming language design
- Discrete math and logic
- Theory of computation
- Software specification and correctness
- Functional programming

## Publications

- Armstrong, Mark & Zucker, Jeffery, Notions of semicomputability in topological algebras over the reals, Computability, vol. 8, no. 1, pp. 1-26, 2019

## Awards

### Graduate studies scholarships and fellowships

Name	Years held	Value
NSERC Postgraduate Scholarship, Doctoral	2017 - 2019	\$42,000
Ontario Graduate Fellowship	2016 - 2017	\$12,000
Dean's Excellence Engineering Doctoral Award	2015 - 2018	\$127,500 <sup>1</sup>
NSERC Canadian Graduate Scholarship, Masters	2014 - 2015	\$17,500
Ontario Graduate Scholarship	2013 - 2014	\$15,000

1. Included guaranteed teaching assistant employment income for those years.

### Other

Name	Date	Value	Description
Gerald L. Keech Medal	2013	—	For highest graduating GPA in program that year.
Ruth and Jack Hall Prize	2011	\$225	For highest 3 <sup>rd</sup> year GPA in program.
Dr. Harry Lyman Hooker Scholarship	2011	\$1500	For academic excellence.
Createch Scholarship	2010	\$1000	For highest 2 <sup>nd</sup> year GPA in program.
Nortel Networks Scholarship	2009	\$1000	For academic excellence.
McMaster entry scholarship	2008	\$2000	

## Extracurricular

- Maintaining my setup/configs for Emacs and other tools (<https://github.com/armkeh/dotfiles>), to build a collection of well-documented tips and tricks.
- Represented McMaster Computing and Software at the Ontario Universities Fair in 2015 and 2016.
- Church secretary, board member, music and youth leader, and kids programming volunteer at Hamilton Mountain Church of the Nazarene, 2007-2015.