# Alexander Schaap

Ph.D. Student

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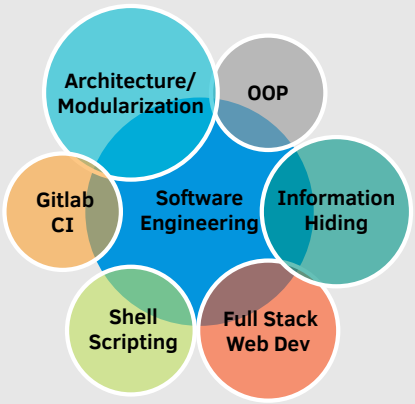
## Skills




### Programming

*Knowledge of* ⟶ *Skilled in*

OCaml • Linux • LaTeX

Java • Lua • Git

Haskell • C++ • JS

## Projects

**Selfhosting** OPNsense router, netboot server, and Debian home server on ZFS for backups via BorgBackup and task management via KanBoard.

**Dana** Website in Ruby and JS to connect restaurants and charities for donating excess food (in return for advertising), and consumers for deals in said restaurants

- 3rd prize at DeltaHacks II
- W Booth Prize for most innovative or entrepreneurial idea

**Rehistoric** Simple GUI revision control for the uninitiated, written in C++ and Qt.

## Education

2017 - Now **Ph.D., Software Engineering** McMaster University, Canada
Generated program families using multi-stage programming and generics in MetaOCaml. Variabilities include programming paradigm and sorting algorithms. Focused on deriving abstract interfaces to provide information hiding w.r.t. paradigm and other design choices.

2014 - 2016 **M.A.Sc., Software Engineering** McMaster University, Canada
Researched generating multiple module decompositions in MetaOCaml, Haskell and Java. Begun investigating paradigm-agnostic program family generation.

2009 - 2013 **B.Sc., Computer Science** University of Twente, the Netherlands
Thesis paper investigated Tor exit-nodes. Courses included Java & Haskell, SQL databases, networking, etc. Minored in Chinese language & culture.

## Experience

Jan 2017 - Now **Graduate Research Assistant** McMaster CERC in Hybrid Powertrain
Resumed position in collaboration between McMaster University and Fiat Chrysler Automobiles (FCA):
- Researching and partaking in modification of automotive control software (Simulink) to domain-controller hardware architecture.
- Researched migration of legacy automotive control software towards compliance with the AUTomotive Open Software Architecture (AUTOSAR) standard, in part via dSPACE SystemDesk.
  - Included largely independent supervision of multiple undergraduate students for a combined 12 months.

Jan 2018 - Apr 2018 **Graduate Teaching Assistant** McMaster University, Canada
Answered technical questions for introductory Bash, Haskell and Elm.

Oct 2016 - Dec 2016 **Research Engineer** McMaster CERC in Hybrid Powertrain
Finalized documentation automation effort from Grad. Research Asst.

Mar 2014 - Aug 2016 **Graduate Research Assistant** McMaster CERC in Hybrid Powertrain
Part of a large multidisciplinary project between McMaster University and Fiat Chrysler Automobiles (FCA) to develop hybrid powertrains:
- Worked with domain experts to reverse-engineer, document and analyze several large FCA Simulink models.
- Directed and took part in the creation of a process and accompanying templates for automated documentation of Simulink models.
  - Included the supervision of an undergraduate student for 16 months with minimal intervention of supervisors.

Feb 2013 - Dec 2013 **IT Manager (part-time)** Soltree Sustainable Solutions
Designed/maintained website, network, and Linux systems.

## Awards

2017, 2018 **Ontario Graduate Scholarship (OGS)** McMaster University, Canada
Awarded $15,000 both years.

## Service & Outreach

2016 - 2017 **Life in Computing & Software (LiCS)** McMaster University
Co-founder & VP-Technology of the first graduate student club in the Computing & Software department. Responsible for creating/maintaining website and assisting in event organization.

2015 - 2019 **E-Sustainability Initiative** McMaster University
Individually collected and repaired e-waste for friends and acquaintances; collaborating with McMaster's Academic Sustainability Programs Office on course project and a student-run reuse organization.