Alexander Schaap

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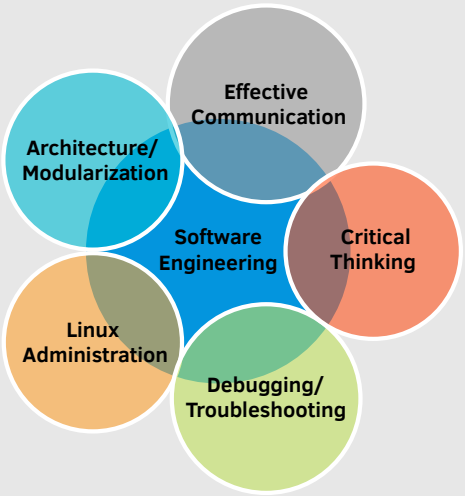
aschaap

Skills



Programming

OCaml • Java • LaTeX

Bash • Lua • Git

Haskell • C & C++ • JS

Projects

From Trash to Treasure Identified e-waste reuse opportunity, and consulted on pilot for refurbishing PCs for children in need within the community and students; diverted over 1000 kg and donated 70 systems.

- Climate Change and Health — Innovation Award ($5000)

Homelab Maintaining personal OPNsense router, network boot server, and file server (using the Zettabyte File System).

Hackathon Project Group ideated and created website in Ruby and JS to connect restaurants for donating excess food and people in need.

- 3rd prize at DeltaHacks II (out of over 350 participants)
- W Booth prize (entrepreneurial)

Education

2017 - Now **Ph.D., Software Engineering** McMaster University, Canada
Developing program family generators using multi-stage programming and generics in (Meta)OCaml. Variabilities include programming paradigm and sorting algorithms. Focusing 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. Initiated investigating paradigm-polymorphic program family generation.

2009 - 2013 **B.Sc., Computer Science** University of Twente, the Netherlands
Focused on: Java, Haskell, SQL, networking, and operating systems. Thesis paper categorizes Tor exit-nodes.

Experience

Mar 2014 - Now **Grad. Research Asst./Research Eng.** McMaster CERC in Hybrid Powertrain
Developing hybrid powertrains for Fiat Chrysler Automobiles (FCA):
- Reverse-engineered several large FCA Simulink models
- Led the creation of Simulink model documentation automation
  - Ready-to-use tool on MATLAB Central
- Porting Simulink and C code to new hardware and hypervisor
- Led the migration of legacy automotive control software (Simulink and C) towards compliance with the AUTOSAR 4.2.2 standard
- Supervised undergraduate students (2+ years)

Feb 2013 - Now **IT Manager (on-demand)** Soltree Sustainable Solutions
Design, develop and maintain website, network, and Linux systems.

Jan 2020 - Mar 2020 **E-Waste Reuse Initiative Student Employee** McMaster UTS, Canada
Spearheaded continuation of the "From Trash to Treasure" project:
- Established collaborative relationships with student organizations
- Planned and presented future direction of project
- Collected, sanitized, repaired e-waste on campus
  - Designed, implemented and documented processes

Jan 2018 - Apr 2018 **Graduate Teaching Assistant (CS 1XA3)** McMaster University, Canada
An introductory course covering core concepts in functional programming and practical programming skills in Bash, Haskell and Elm.

Selected Publications

A. Schaap, G. Marks, V. Pantelic, M. Lawford, G. Selim, A. Wassyng, and L. Patcas. "Documenting Simulink Designs of Embedded Systems". In: *Proc. 21st ACM/IEEE Int. Conf. on Model Driven Engineering Languages and Systems: Companion Proceedings*. 2018.

A. Schaap. "Towards Generating Software Modularizations". Master's Thesis. 2016.

A. Schaap. "Characterization of Tor Exit-Nodes". In: *Proc. 18th Twente Student Conf.* 2013.

Awards

2017,'18,'20 **Ontario Graduate Scholarship** ($15,000 each year)

Community Involvement

2016 - 2017 **Life in Computing & Software (LiCS)** McMaster University
Co-founder & VP Tech of the first graduate student club to improve student life in the CAS department.