Alexander Schaap

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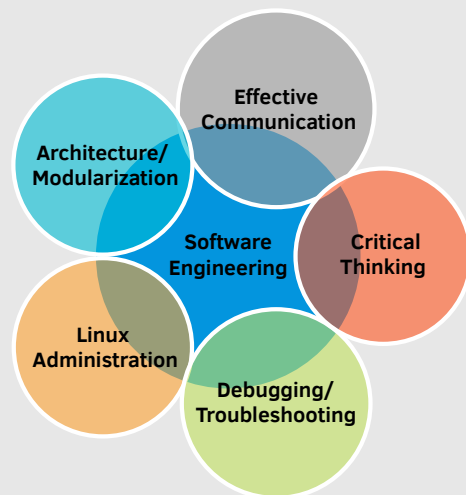
in /in/alexanderschaap

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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 OP-Nsense router, network boot server, and file server.

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)

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.

Sep 2012 - Oct 2012 — **Undergraduate Teaching Assistant** University of Twente, the Netherlands
A second-year relational databases course.

Jun 2009 - Jul 2012 — **Webmaster (part-time)** Engelen Shambhala, the Netherlands
Joomla E-commerce website design (HTML, CSS & JS) and customization (PHP & MySQL), SEO, optimization, maintenance

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.

Awards

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

Community Involvement

Sep 2020 - Dec 2020 — **Collaborator on 3S03 Repair Café Course Project** McMaster University
Provided technical expertise working together with the McMaster University Library McMaster's Academic Sustainability Programs Office.

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.