

Thomas Schweizer

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WORK EXPERIENCE

- Applied Scientist Intern.** AMAZON AWS 2022
- Improved the performance of machine learning models that automatically fix bugs by developing a technique to improve the quality of existing source code datasets.
- Applied Scientist Intern.** AMAZON AWS 2021
- Improved security coverage for all internal Java Web Applications at Amazon by detecting web vulnerabilities using taint analysis on extracted front-end code.
- Research Software Developer.** MILA - QUEBEC ARTIFICIAL INTELLIGENCE INSTITUTE 2020
- Developed a machine learning hyper-parameter optimizer used by top ML researchers and students.
 - Researched, designed, and developed hyper-parameter visualization features in collaboration with IBM research.
 - Improved productivity and coordination for our team of 10 developers by establishing formal management and tracking tools for software projects.
- Software Engineer.** DIGGER FOUNDATION 2014 - 2019
- Developed the back-end software and the Android app of the SMART system deployed in Asia, Europe, and Africa to remove landmines safely using remote-controlled machines and dogs.
 - Researched and prototyped virtual reality systems to remotely pilot excavators in hazardous environments. The systems are deployed in France and Switzerland.
 - Enforced systematic testing for critical software components by introducing an integrated workflow platform and establishing practical software development guidelines for the company.

EDUCATION

- M.S. in Computer Science** (Ph.D. Candidate). UNIVERSITY OF WASHINGTON, United States 2023
Research in improving developer tools using machine learning and program analysis.
- M.S. in Computer Science.** UNIVERSITÉ DE MONTRÉAL, Canada 2020
Research in design decisions in software projects using artificial intelligence and software metrics.
- B.S. in Computer Science.** HEIG-VD, Switzerland 2014
Major in Software Engineering

RELEVANT SKILLS

Topics: Software Engineering, Machine Learning, Natural Language Processing, Data Science, Databases
Languages: Java, Python, HTML/CSS/JavaScript, R, Bash, Swift, SQL

PUBLICATIONS AND PRESENTATIONS

- T.Schweizer.** "An Empirical Evaluation of Commit Untangling Tools." **First place.** *ACM Student Research Competition, 2023 International Symposium on Software Analysis and Testing (ISSTA).* Seattle, USA, 2023.
- T.Schweizer, V. Zafeiris, M. Fokaefs and M. Famelis.** "Can Refactorings Indicate Design Tradeoffs?." *2020 IEEE 20th International Working Conference on Source Code Analysis and Manipulation (SCAM).* Adelaide, Australia, 2020.
- T. Schweizer,** advised by M. Famelis. "Towards Using Fluctuations in Internal Quality Metrics to Find Design Intentions." *Master Thesis - Université de Montréal.* Montréal, Canada, 2020.
- T. Schweizer.** "Applying Software Engineering Principles to a Machine Learning Algorithm: Lessons Learned." *Poster session at Software Engineering for Machine Learning Applications (SEMLA).* Montréal, Canada, 2018.

SELECTED PROJECTS

Babylon, PERSONAL PROJECT: Designed and developed a personal finance app for couples to track their spending and savings on iOS by connecting to their bank through Plaid.

Email Assistant, HACKATHON: Won the 2023 Fixie.ai Hackathon by building a web app that drafts email replies automatically using a Large Language Model (LLM) and a Gmail integration.

Tellina, UNIVERSITY OF WASHINGTON: Found that low-performance (60%) machine learning models can be helpful to developers when embedded in a software system by developing and conducting 2 controlled experiments with more than 40 participants.

Pause, PERSONAL PROJECT: Designed, developed, and deployed a health productivity app built on the Electron framework (HTML/CSS/Javascript/NodeJS).

Stargazers, UNIVERSITÉ DE MONTRÉAL: Led a team of 4 to train and test machine learning models to detect new exoplanets from NASA's Kepler dataset with an average accuracy of 97%.

Detecting Design Principles, UNIVERSITÉ DE MONTRÉAL: Trained a machine learning model that detects the application of SOLID design principles from metric changes in source code with an F1 of 66.4%.

Evolution et vie artificielles, HEIG-VD: Conducted controlled experiments to understand the genetic evolution of populations of digital organisms and their behaviors by developing a genetic library in C# and a 3D physics-based simulation environment in Unity.

AWARDS AND ACHIEVEMENTS

UNIVERSITY OF WASHINGTON (GPA 3.9)

First place: ACM Student Research Competition at the 32nd ACM SIGSOFT International Symposium of Software Testing and Analysis 2023

Research Fellowship: Allen School Computer Science & Engineering 2020 - 2023

UNIVERSITÉ DE MONTRÉAL (GPA 4.0)

Bourse de rédaction DIRO: Departmental scholarship for thesis redaction 2019

Bourse d'excellence DIRO: Departmental scholarship for academic excellence 2018 - 2019

Bourse d'excellence FESP: Graduate and post-doctoral studies faculty scholarship for academic excellence 2018 - 2019

Bourse C: Scholarship of excellence for international students 2018 - 2020

HAUTE ECOLE D'INGÉNIERIE ET DE GESTION DU CANTON DE VAUD (Grade A, Class rank 1)

Prix HEIG-VD : Best overall results during all semesters and final project 2014

Prix GiTi : Excellent bachelor project "*Evolution et vie artificielles*" 2014

SAN JOSE STATE UNIVERSITY (Summer University Program)

Best overall grades among 40 international students in the program 2013