Andre Kuhlenschmidt

CONTACT INFORMATION

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OBJECTIVE

Computers are tools that help humans scale to the problems they are solving. Programming languages are tools that help humans scale to the computers they are using. I want to design and build compilers, runtime systems, type systems, and other tools that make it easier to produce quality software.

EDUCATION

Indiana University, Bloomington, Indiana USA

Ph.D. Candidate ABD, Computer Science, Advisor: Jeremy Siek — **May 2021**
M.S., Computer Science — **May 2016**
B.S., Business, Major: Entrepreneurship — **May 2010**

EXPERIENCE

Semgrep, Remote
Senior Software Engineer — **June 2023 – Current**

- Worked with a small team to bring a security product to beta release in a single quarter.
- Collaborated with customer success engineers to enable our static analysis engine to scale to customer codebases, address specific customer needs, and improve user experience.

Meta, Redmond, Washington USA
Software Engineer — **December 2020 – April 2023**

- Collaborated on the design of a programming language to make developing performant distributed applications easier, enabling developers to write applications that migrate between cloud and device to minimize power consumption.
- Started and led a research paper reading group to regularly review and discuss papers relevant to our compiler's design which improved our implementation strategies.
- Implemented algebraic datatypes, closures, mutuable arrays, local mutable variables, and a compiler backend targeting LLVM.
- Rated as Exceeding Excpectations for Individual Contributor Level 4 in 2022.

Indiana University, Bloomington, Indiana USA
Graduate Research Assistant — **January 2014 – December 2020**

- Evaluated implementation techniques for sound gradually typed programming languages.
- Developed an ahead-of-time compiler called Grift.
- Measured performance improvements in compiler via benchmark experiments.
- Designed semantics that facilitate safety and efficiency.

Meta, Seattle, Washington USA
Software Engineering Ph.D. Intern — **May 2019 – August 2019**

- Extended Flow type checker to interactively edit code based on type inference.
- Extended Flow to automatically fix a class of errors that are caused by omitting type annotations.

Indiana University, Bloomington, Indiana USA
Assistant Instructor — **January 2016 – May 2018**, **August 2012 – May 2014**

- Planned and constructed materials and software for courses in programming language semantics and implementation, operating systems, and embedded systems.
- Instructed lab sessions of 5-30 students.
- Recognized as Assistant Instructor of the Year in 2018.

Skills

Languages: OCaml, Racket, Scala, C, Haskell, Java, Python, Coq, C++
Tools and Platforms: Bash, Hg, Git, Make, Github Actions, Linux, Mac OS

Conference Papers

Toward Efficient Gradual Typing for Structural Types via Coercions Andre Kuhlenschmidt, Deyaaeldeen Almahallawi, and Jeremy G. Siek. In Programming Language Design and Implementation 2019.

Refereed Articles

An Efficient Compiler for the Gradually Typed Lambda Calculus Andre Kuhlenschmidt, Deyaaeldeen Almahallawi, Jeremy G. Siek. In Scheme and Functional Programming Workshop, 2018.

A Systematic Performance Evaluation of Gradually Typed Functions and References. Andre Kuhlenschmidt, Deyaaeldeen Almahallawi, Jeremy G. Siek. In Scripts to Programs Workshop, STOP, 2016.

Towards Absolutely Efficient Gradual Typing Andre Kuhlenschmidt, Deyaaeldeen Almahallawi, and Jeremy G. Siek. In Scripts to Programs Workshop, STOP, 2015.

Open Source Projects

Grift **May 2014 – December 2021**

- Collaborator on an optimizing compiler for a gradually typed Lisp to native code.
- Utilizes *space-efficient coercions* to enforce soundness of the static type system, which results in a performance increase that is multiple orders of magnitude.

Professional Activities

IU Luddy Graduate Education Committee, Student Representative — January 2018 - August 2020
OOPSLA Artifact Evaluation Committee — August 2018
SPLASH Student Research Competition Program Committee — August 2018