Xy Ren

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Affiliation

PLCT Lab, Intern Research Engineer *Remote, 2020/10–2021/10*

Intelligent Software Research Center, China Academy of Science

- Investigated several techniques in implementation of type theories and programming languages
- Contributed heavily to the open source proof assistant Aya Prover

MLabs, Software Consultant (Haskell & Plutus) *Remote, 2021/10–Present*

- Contributed to open source utility libraries for the Plutus smart contract language
- Improved the testing experience of Plutus smart contracts

Taichi Graphics, Intern Infrastructure Engineer *Remote, 2021/11–Present*

- Added short-circuit boolean operators to the Taichi compiler
- Refactored several AST passes to make porting other languages to Taichi AST easier

Open Source Contribution

Aya Prover *https://www.aya-prover.org*

A programming language and a proof assistant designed for formalizing maths and type-directed programming

- Core contributor, ranked 3rd in total commits
- Implemented critical components: variable name resolution, type-directed unification and module system
- Maintainer of project documentation and designer of project logo

Personal Projects

cleff *https://github.com/re-xyr/cleff*

Fast and consise extensible effects in Haskell that works seamlessly with the current ecosystem

avail *https://github.com/re-xyr/avail*

Zero-overhead capability management mechanism for monad transformers

aqn *https://github.com/re-xyr/aqn*

Simple implementation of efficient dependent type elaboration using HOAS normalization-by-evaluation

Skills

- **Programming languages:** Comfortable with Haskell (2 years), JavaScript (3 years), TypeScript (3 years), Agda, Java, Kotlin; Able to read C, C++, Coq, Idris, Arend
- **Compiler and PLT:** Familiar with compiler frontends and type systems, able to implement algorithms like bidirectional typechecking, higher-order metavariable solving and type-directed unification
- **Type theory:** Learned about several flavors of the lambda calculus, such as Martin-Löf type theory; also have basic understanding in relevant fields, including category theory and homotopy type theory
- **Web:** Experienced with Node.js and TypeScript; able to use Vue.js and willing to learn about other frameworks
- **Language:** English: Advanced (TOEFL 112); Chinese: Native
- Open to learning new languages, technologies and concepts