Tesla Zhang

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Education

B.S. in Computer Science at **The Pennsylvania State University**, PA, US 08/2018 – Present
Minor in Mathematics, Anticipated Date of Graduation: 01/2023 GPA 3.32/4.00

Job Experience

RisingWave Labs, Remote 7/2022 – Present
Streaming Database Developer Intern

- Proposed an overhaul of the query plan AST design, which better facilitates the enum feature implemented in the Rust programming language.

PLCT Lab, Remote 12/2020 – Present
Implementation of Dependent Types Opensource Maintainer

JetBrains Research, Remote 01/2020 – 12/2020
HoTT and Dependent Types Arend Team Intern

- Improved the language/IDE, such as sections, hygiene macros, optimized `Fin` type, semantic highlighting, etc.
- Created a debugger for inspecting bidirectional type-checking and REPL in both CLI and IDE.

PingCAP Inc., Remote 08/2018 – 08/2019
Distributed Storage Systems TiKV Intern - Ecosystem Team

Sourcebrella Inc., Shenzhen, China 02/2018 – 07/2018

Related Projects

Aya Prover Practical implementation of a dependent type system (role: project leader)

- Supports dependent types, dependent pattern matching with confluence check for overlapping cases, higher inductive types, GADTs, hierarchial universes, cubical type theory features, and implicit arguments.
- Supports visualization of the type checking traces and exporting elaboration result to HTML or LaTeX. Supports LSP in VSCode. Binaries releases are based on jlink and GraalVM native-image.

IntelliJ Pest A Pest grammar language plugin for IDEs based on the IntelliJ Platform

- Semantic-based highlighting, completion, navigation, definition extraction/inlining, and Rust plugin integration.
- Provides live preview – test grammar files by dynamically highlighting user code according to the grammar on the fly. These highlighted code could be exported to HTML.

Skills

- **Program Language**: **multilingual** (not limited to any specific language), especially experienced in Java Kotlin Rust C# Agda Haskell Arend, comfortable with Dart C C++ F# F⋆ Idris Perl MATLAB (in random order).
- **Compiler**: understand various program representations such as CFG, ANF, (P)HOAS, etc.
- **Kotlin/Java**: **6 years** of experience, familiar with JNI, Gradle, Kotlin coroutines, and Swing.
- **Type Theory**: understand Martin-Löf type theory, coinduction, HoTT, and Cubical, familiar with Idris, Agda (**3 years** of experience, contributor), Arend and some F⋆/Coq.
- **IDE Tooling**: **3 years** of experience, familiar with the IntelliJ Platform infrastructure (created Julia, DTLC, Pest, etc.), also have experience with Eclipse/SonarQube/VSCode plugin development.
- **Development Tool**: can adapt to any editors/OSs, usually use JetBrains IDEs and Emacs in Ubuntu.

Miscellaneous

- Profile Links (please use a PDF reader with hyperlink support): Crates.io (publishing Rust libraries), IntelliJ Marketplace, Research profile
- Languages: English - fluent (TOEFL 100), Chinese - native speaker
- Opensource Contributions: https://ice1000.org/opensource-contributions contributed to agda, Arend, KaTeX, shields.io, grpc-rs, intellij-solidity, intellij-haskell, intellij-rust, TeXiFy-IDEA, rust-analyzer and other projects
- StackOverflow: 6000+ reputations, also active on other StackExchange sites
- Latest one-page version of this resume: https://tinyurl.com/y8xdlfug
- Latest complete version of this resume: https://tinyurl.com/y2v59t36
- **1 dan** on CodeWars, ranked #78 on the whole site (Top 0.019%), primarily in Haskell, Agda, and Idris

Publications

1. Tesla Zhang. "A Simpler Encoding of Indexed Types". In: *Proceedings of the 6th ACM SIGPLAN International Workshop on Type-Driven Development*. TyDe '21. Republic of Korea: ACM, 2021. ISBN: 978-1-4503-8616-6. DOI:

10.1145/3471875.3472991. arXiv: 2103.15408