Tesla Ice Zhang

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EDUCATION

The Pennsylvania State University, PA, US   08/2018 – Present

Major: Computer Science (Undergraduate), Anticipated Graduation Date: 06/2022, GPA 3.23/4.00

WORK EXPERIENCE

JetBrains Research, Remote   01/2020 – 12/2020

(HoTT and Dependent Types)   Arend Team Intern
- Used features like gradle composite build and buildSrc to reduce build time and improve automation.
- Improved the language/IDE, such as sections, hygiene macros, optimized `Fin` type, semantic highlighting, etc.
- Created an extensible REPL framework, provided implementations in CLI (with contextual completion) and in IntelliJ IDEA (interacts with the opened project, supports completion, highlighting and goto definition).
- Designed and implemented an expression type-checking debugger that supports step-into and displays local context and expressions as stack frames.

PingCAP Inc., Remote   08/2018 – 08/2019

(Distributed Storage Systems)   TiKV Intern - Ecosystem Team
- Improved many TiKV-relevant libraries, like optimizing the performance of grpcio, adding new features to procinfo.
- Helped to migrate the Protocol-Buffer library used by TiKV and its Raft implementation.
- Learned a lot about Rust programming, distributed system, working remotely, and databases.

Sourcebrella Inc. (now Ant Financial Code Insight), Shenzhen, China   02/2018 – 07/2018

(Static Analysis)   Developer Intern
- Created IntelliJ/CLion/Eclipse plugin for the Pinpoint analyzer. Co-worked on the SonarQube plugin.
- Created a multi-threading cross Java/Kotlin source code indexer which can index Hadoop within 4 minutes.
- Learned a lot about Linux programming and the Clang/LLVM codebase.

PERSONAL PROJECTS

DevKt   https://github.com/ice1000/dev-kt

Cross-platform lightweight code editor / Kotlin IDE
- Built-in Java/Kotlin highlights and completion, that can support other languages via plugins (transplantable from JetBrains IDE's). Has extra build & run support for Kotlin.
- Provides fine-grained highlight color and keymap settings, supports hot reload.

Voile   https://github.com/owo-lang/voile-rs

Experimental dependently-typed language with kind-based row-polymorphism
- Supports dependent types, meta variable unification, and non-dependent row-polymorphic record and variant.
- Supports cumulative universe and typical ambiguity to get rid of Setω.

IntelliJ Pest   https://github.com/pest-parser/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.
- Supports exporting the highlighted user code to HTML format.

External tactics for Agda   https://github.com/ice1000/agda-mode

A REPL interacts with Agda CLI interface, simulating Ltac in Coq. Supports most actions available in the Emacs mode, like case-split, show expression and goal type, etc., implements IO via tokio and serde along with the required json interface in Agda compiler.

JImgui   https://github.com/ice1000/jimgui

Java port of *dear imgui* implemented in JNI, with FFI code generated by custom tool. Optimized JNI performance using the *Critical Native* feature of the HotSpot VM, Supports auto-load built-in native libraries for mainstream platforms, implements image loading and window scaling apart from the vanilla imgui library.

Arend IO   https://github.com/ice1000/arend-io

Experimental IO library for Arend, implements `unsafePerformIO` and simple `IO` actions.

VSCode extension for Arend   https://github.com/ice1000/vscode-arend

VSCode extension for the Arend language, build on top of the experimental implementation of the Arend language server.

Arend language server   https://github.com/ice1000/arend-language-server

An experimental implementation of the Arend language server, based on the lsp4j framework and Arend compiler's internal interfaces.

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 (in random order).
- **Compiler**: understand various program representations such as CFG, ANF, HOAS, etc. Familiar with most parser generators, understand layout syntax parsing.
- **Kotlin/Java**: **4 years** of experience, **4** projects collected in Awesome Kotlin, familiar with JNI, Gradle, and Swing, understand Contract DSL and Kotlin coroutines, did some code analysis with Kotlin's compiler.
- **Type Theory**: understand Martin-Löf type theory, coinduction, Homotopy type theory and Cubical type theory, familiar with Idris, Agda (**3 years** of experience, contributor), F⋆, Arend (prior member) and some Coq.
     Source code studied: Agda, Idris, MiniAgda, Mini-TT, elaboration-zoo and Arend.
- **JetBrains MPS**: understand concepts and applications of **Language-Oriented Programming**.
- **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.
- **Mobile Development**: **2 years** of experience, Android (Java, Kotlin (Anko)), Fuchsia (Flutter)
- **Development Tool**: can adapt to any editors/OSs, usually use JetBrains IDEs and Emacs under Ubuntu, have experience with team collaboration tools like YouTrack, Jira, GitHub, BitBucket, Coding.net, Tower, Slack, JetBrains Space.

MISCELLANEOUS

- Bintray profile: https://bintray.com/ice1000, for publishing useful JVM libraries
- Crates.io profile: https://crates.io/users/ice1000, for publishing interesting Rust libraries
- IntelliJ Plugin developer profile: https://plugins.jetbrains.com/author/10a216dd-c558-4aaf-aa8a-723f431452fb
- Research profile: https://personal.psu.edu/yqz5714
- Languages: English - fluent (TOEFL 100), Chinese - native speaker
- Opensource Contributions: https://ice1000.org/opensource-contributions
  member of JuliaEditorSupport, agda, pest-parser, EmmyLua, arend-lang and more, contributed to agda, Arend, KaTeX, shields.io, raft-rs, grpc-rs, intellij-solidity, intellij-haskell, intellij-rust, intellij-arend, TeXiFy-IDEA, rust-analyzer and other projects (apart from organization ones)
- StackOverflow: https://tinyurl.com/y5cmw3dz 5000+ reputations, also active on other StackExchange sites
- Get the latest one-page version of this resume: https://tinyurl.com/y8xdlfug
- Get the latest complete version of this resume: https://tinyurl.com/y2v59t36
- Get the Chinese version of this resume: https://tinyurl.com/ya4urea8
- **1 dan** on CodeWars, ranked #50 on the whole site (Top 0.019%), solving and making new problems primarily in Haskell, Agda and Idris
- Love making friends