

# TESLA ZHANG

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## EDUCATION

**The Pennsylvania State University, PA, US** 08/2018 – Present  
Major: Computer Science (Undergraduate), Anticipated Date of Graduation: 01/2023 GPA 3.32/4.00

## WORK EXPERIENCE

**Singularity Data, Remote** 7/2022 – Present  
(Streaming Database) Developer Intern

**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 (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