

# TAINÉ ZHAO

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## 🎓 EDUCATION

**Nanjing University of Science and Technology**, Jiangsu, China 09/15 – Current  
Major: Mathematics and Applied Mathematics

## 👨‍💻 WORK EXPERIENCE

**Microsoft Research Asia**, Beijing, China 11/17 – 02/19

*Intern* Compiler Design, Distributed System, Machine Learning Framework

- Created an implementation of dynamically loading and updating distributed data schema for Microsoft GraphEngine
- Created prototypes for MSRA internal projects about future machine learning frameworks, including gluing Python with MySQL in runtime level, and an extended SQL
- Created a LLVM IR builder framework in .NET side, which is introduced into a future/extended version of GraphEngine to achieve JIT support
- Finished a part of lowering tasks for the first/basic language in the platform of that future/extended version of GraphEngine

## 🐱 PERSONAL PROJECTS

**YAPyPy** <https://github.com/Xython/YAPyPy>

Yet Another Python Python / Pure Python Compiler

**MLStyle.jl** <https://thautwarm.github.io/MLStyle.jl/latest/>

A Julia package that provides ML language infrastructures like extensible pattern matching, ADTs/GADTs, etc.

**FSTan** <https://github.com/thautwarm/FSTan>

F# implementation of Lightweighted Higher Kinded Types and type classes

**RSolve** <https://github.com/thautwarm/RSolve>

A general purposed solver for logic programming in Haskell

**LanguageCollections** <https://github.com/thautwarm/LanguageCollections>

List of languages invented by me, which has recorded my experience of learning this topic

## ⚙️ SKILLS

### Compiler - Front End

- Experienced in creating lexer generators, LL(1)/LL(k) Parser Generators and Parser Combinators
- Have a knowledge about generating LR(1) parsers from BNF grammars or Parser Combinator notations

### Compiler - Middle End

- Experienced in various kinds of (static) program analyses and transformations
- Familiar with type inferences based on HM unification

### Compiler - Back End

- Familiar with syntaxes, semantics and some intrinsics of LLVM IR
- Familiar with CPython bytecode instructions and code objects, etc.
- Have some experience about code generation that targets LLVM IR or CPython bytecode

### Compiler - Others

- Experienced in making DSLs
- Familiar with low level data layouts
- Familiar with implementing high level language constructs

### Functional Programming

- Familiar with type classes and higher kinded types
- Understand and can make good use of CPS, Y-Combinators, simple untyped/typed lambda calculus
- Understand Monad related stuffs from Monoid to MonadTrans

## Machine Learning

- Have a lot of experience about using traditional ML toolchains like NumPy, Scikit-Learn, Pandas, Matplotlib, etc.
- 2016 CCF/DataFountain Agricultural Product Price Prediction rank 7/500+
- Have some knowledge about bioinformatics and NLP
- Capable of taking advantage of ML in daily life

## i MISCELLANEOUS

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- Blog: <https://thautwarm.github.io/Site-32/>
- PyPI: <https://pypi.org/user/thautwarm/>
- PyConChina 2018: [http://cn.pycon.org/2018/city\\_beijing.html](http://cn.pycon.org/2018/city_beijing.html), as a lecturer(called *NightyNight*)
- Open source contributions: contributed to some organizations such as *Microsoft*, *Python*  
Fetch the meaningful records from <https://thautwarm.github.io/Site-32/Others/contributions.html>
- Codewars: <https://www.codewars.com/users/NightyNight/>, basically merely prefer to finish the most difficult trainings