

DING FENG

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EDUCATION

National University of Singapore

August 2023 - Present

*B.Comp. in Computer Science
with minor in Mathematics*

- Recipient of Science & Technology Undergraduate Scholarship

Selected Coursework:

Prog. Lang. Implementation
Compiler Design

Logic for Proofs and Programs
Multivariable Calculus

Theory of Computation
Logic in Computer Science

Overall GPA: 4.53/5.0 (*Highest Distinction*)

PERSONAL INTERESTS

I am a computer science student with broad research experience in programming languages and proven track record in full-stack development.

I like to build new things with the help of computer and mathematics. I like to cooperate with other people. Currently, my focus is mainly on logical foundation of software, next-generation methodologies for understanding computer programs and machine assisted approaches to build reliable software.

EXPERIENCE

PLI Lab, National University of Singapore

Jan 2025 - Present

Research Assistant

Singapore

- Work on a year-long funded project about language implementation, under the advice of *Prof. Michael D. Adams*. Get familiar with Haskell and gain more practical experience on functional programming.
- Explore a new paradigm of programming which is based on duality between expressions and continuations. Design and implement a demonstrative language (*Mini-Mu*) then try to figure out possible ways of utilizing it. Design the mental models for this new paradigm.
- Get more insights into general aspects of structure and interpretation of programs. Preliminarily shows the hidden but powerful existence of duality in existing programming paradigms and concepts(e.g. OOP, data structures, and the control-flow of functional programming languages).
- The work is awarded bronze medal at ICFP'25 SRC in Singapore.

Source Academy, National University of Singapore

Aug 2024 - Present

Researcher & Software Engineer

Singapore

- Add the support for Pie (<https://thelittletyper.com>) on Source Academy (a widely used teaching system for teaching in NUS <https://sourceacademy.org>), under the supervision of *Prof. Martin Henz*.
- Re-implemented the original interpreter and parser written in *Racket* using *TypeScript*, in order that a *Pie* program can be interpreted natively using browser.
- Get familiar with dependent types system and interactive theorem provers. Get the preliminary ability of using them to augment and/or reason the semantics of programs.
- Integrate the interpreter into the system using the conductor framework. Work on a language server protocol for the language.
- Source code: <https://github.com/source-academy/pie-slang>. The project has been awarded the *Best Project Prize* in STEP'26.

School of Computing, National University of Singapore

Aug 2024 - May 2025

Teaching Assistant

Singapore

- Teach *CS1231S - Discrete Structures* in 24/25 SEM 1, with multiple teaching indicators in feedback surpass department average.
- Teach *CS2040S - Data Structures and Algorithms* in 24/25 SEM 2.
- Conduct weekly tutorial sessions (2-hour lecture with ~ 15 students), mark students homework scripts and give timely feedback. Also, answer students' questions after class.

Orbital - Software Engineering Program @ NUS

May 2024 - Aug 2024

*Software Engineer**Singapore*

- Build a fully operational music player, with various distinct functions including switching between modes, and AI music recommendation, and automatic track separation based on open-source tools.
- Co-manage the progress of the project by using various version-control features of Git extensively.
- Co-develop and test the front-end of the project, with more than 16,000 lines of code written based on *Flutter* framework. Code: <https://github.com/dingf3ng/spoplusplusfy>.
- Co-develop and test the back-end system of the project, including a set of RESTful API and internal logic, which is based on *Django*.
Code: https://github.com/kaoxi998533/spo-fy_backend

New Oriental Education & Technology Group

Jul 2024 - Aug 2024

Teaching Assistant

Mar 2023 - Jun 2023

Tianjin, China

- Full-time internship as teaching assistant for Mathematics and Physics.
- In charge of a class with capacity of about 10 students. Manage their attendance and make sure they complete their homework on time.
- Answer students' various questions when they need. The questions are majorly from *A-level*, *AP*, and Chinese *Gaokao* curriculum.

Research Workshop

Jun 2022 - Sep 2022

*Researcher**Online*

- Join a project-based research workshop, exploring machine learning methods to analyze and predict price of Cryptocurrency.
- Enhance Python programming skills and get familiar with a set of the external libraries.
- Learn how to conduct data processing and analysis, construct statistical models, and measures to evaluate model's performance.

PROJECTS

- A fully automated tool for downloading and uploading from/to multiple targets, utilizing gRPC and message queue in golang.
- A formally verified interpreter and compiler for arithmetic expressions, using theorem prover *Coq*.
- A Rust sub-language's typechecker, compiler and a virtual machine with 3000+ LOC written. Demonstrating the complex borrowing and moving rules in Rust programming language. <https://github.com/24-25S2-CS4215Project/Rusted>.
- My personal website based on ReactJS framework. <https://dingf3ng.github.io>.

TECHNICAL STRENGTHS**Programming Languages***Java, Python, Go, Dart, JavaScript, Coq, Haskell, OCaml, Racket.***Technology Stack***gRPC, RabbitMQ, Flutter, Django, ReactJS, MySQL, MongoDB, Docker*