

Yaozhu Sun

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EDUCATION

University of Hong Kong

PhD in Computer Science

Field of Study: Programming Languages

Hong Kong, China

November 2024 (Expected)

Zhejiang University

BEng (Hons) in Computer Science and Technology

Affiliation: Qiushi Science Class, Chu Kochen Honors College

Hangzhou, China

June 2019

ACADEMIC EXPERIENCE

University of Hong Kong

Doctoral Student / Research Assistant

Advisor: Prof. Bruno C. d. S. Oliveira (Programming Languages Group)

Hong Kong, China

September 2019 – Present

- Doing research around *Compositional Programming* (CP), a new modular programming paradigm that solves challenges such as the *Expression Problem*. The research projects I participated in include:
 - *Next-Gen CP*: a new in-browser implementation of CP, as well as a compiler targeting JavaScript;
 - *Compositional Embedding*: applying CP to embedded domain-specific languages (EDSL);
 - F_i^+ : the mechanically formalized core calculus for CP, retrofitted with call-by-name and type-directed operational semantics and further extended with mutable references.

Tokyo Institute of Technology

Exchange Student

Advisor: Prof. Hidehiko Masuhara (Programming Research Group)

Tokyo, Japan

April 2017 – February 2018

- Conducted research on object-oriented high-performance computing and contributed to two relevant projects:
 - *Ikra-Cpp*: a C++/CUDA EDSL for the structure-of-arrays layout;
 - *Ikra-Ruby*: a Ruby EDSL for array-based GPU computing.

PUBLICATIONS

- x. Yaozhu Sun, Xuejing Huang, and Bruno C. d. S. Oliveira. **Type-Safe Compilation of Dynamic Inheritance via Merging**. In submission to *ACM Transactions on Programming Languages and Systems*.
5. Wenjia Ye, Yaozhu Sun, and Bruno C. d. S. Oliveira. **Imperative Compositional Programming: Type Sound Distributive Intersection Subtyping with References via Bidirectional Typing**. In *OOPSLA (ACM SIGPLAN International Conference on Object-Oriented Programming Systems, Languages, and Applications)*, 23 October 2024.
4. Yaozhu Sun, Utkarsh Dhandhan, and Bruno C. d. S. Oliveira. **Compositional Embeddings of Domain-Specific Languages**. In *OOPSLA (ACM SIGPLAN International Conference on Object-Oriented Programming Systems, Languages, and Applications)*, 10 December 2022.
3. Andong Fan, Xuejing Huang, Han Xu, Yaozhu Sun, and Bruno C. d. S. Oliveira. **Direct Foundations for Compositional Programming**. In *ECOOP (European Conference on Object-Oriented Programming)*, 16 June 2022.
2. Weixin Zhang, Yaozhu Sun, and Bruno C. d. S. Oliveira. **Compositional Programming**. *ACM Transactions on Programming Languages and Systems*, Volume 43, Issue 3, September 2021.
1. Matthias Springer, Yaozhu Sun, and Hidehiko Masuhara. **Inner Array Inlining for Structure of Arrays Layout**. In *ARRAY@PLDI (ACM SIGPLAN International Workshop on Libraries, Languages, and Compilers for Array Programming)*, 19 June 2018.

TALKS

2. Yaozhu Sun, Xuejing Huang, and Bruno C. d. S. Oliveira. **Separate Compilation of Compositional Programming via Extensible Records**. In SRC@APLAS (*APLAS Student Research Competition*), 27–29 November 2023.
1. Yaozhu Sun and Bruno C. d. S. Oliveira. **Named Arguments as Records**. In TFP (*International Symposium on Trends in Functional Programming*), unrefereed and unpublished, 18 March 2022.

INDUSTRIAL EXPERIENCE

International Digital Economy Academy

Compiler Development Intern, Digital Infrastructure Innovation

Shenzhen, China

May – August 2023

- Worked on the MoonBit compiler, which is written in OCaml and targets WebAssembly, and mainly contributed code for dead code analysis, access control, and {cont,loop}ification using join points.

Microsoft Research Asia

Research Intern, Machine Learning Group

Beijing, China

April – July 2019

- Worked on a distributed computing engine in the team of ML Systems.

Huawei 2012 Labs

Compiler Development Intern, Programming Languages Lab

Hangzhou, China

July – August 2018

- Contributed to the Clang-based compiler frontend for Huawei’s AI chips.
- Contributed to the Python infrastructure of Huawei’s deep learning framework.

AWARDS

APLAS Student Research Competition

First Prize & Audience Awards (as the first author of Talk 2)

AAFS

November 2023

European Conference on Object-Oriented Programming

Distinguished Artifact Award (as the second author of Publication 2)

AITO

July 2021

ASC Student Supercomputer Challenge

First Prize (as a team member)

Asia Supercomputer Community and Inspur Group

May 2018

Mobile Application Innovation Contest, China Collegiate Computing Contest MOE, Tsinghua U. and Apple Inc.

Second Prize (as the team leader)

September 2016

Parallel Application Challenge

Bronze Award in Optimization Track (as a team member)

CCF TCHPC and Intel Corporation

November 2015

National Olympiad in Informatics in Provinces

First Prize in Jiangsu Province (individual)

China Computer Federation (CCF)

December 2012

ACADEMIC ACTIVITIES

Artifact Evaluation Committee: ECOOP 2024, POPL 2024, ICFP 2023, PLDI 2023, APLAS 2022.

External Reviewer / Subreviewer: ECOOP 2024, APLAS 2023, GPCE 2022, ECOOP 2022, SBLP 2021.

Student Volunteer: SPLASH 2022.

Funded Attendee: PLISS 2023, OPLSS 2022.