

Ningning Xie

Professional Positions

- Aug 2023- **Assistant Professor.**
University of Toronto, Toronto, Canada.
- Nov 2022- **Research Scientist.**
Google DeepMind.
- Oct 2021-2022 **Research Associate.**
University of Cambridge, Cambridge, UK.
- May-Sept 2021 **Research Intern.**
DeepMind, London, UK (remote).
- Jan-Aug 2020 **Research Intern.**
Microsoft Research, Redmond, WA.
- Aug-Nov 2019 **Software Engineer Intern.**
Google, New York City, NY.

Education

- 2021 **Ph.D., Computer Science.**
University of Hong Kong, Hong Kong
- 2015 **B.S. (with Honors), Computer Science and Technology.**
Zhejiang University, Hangzhou, China

Publications

- PLDI'25 Andong Fan, Han Xu, **Ningning Xie** **Practical Type Inference with Levels**. *46th Conference on Programming Language Design and Implementation*.
- PLDI'25 Gordon Plotkin, **Ningning Xie** **Handling the Selection Monad**. *46th Conference on Programming Language Design and Implementation*.
- ICFP'24 Tsung-Ju Chiang, Jeremy Yallop, Leo White, **Ningning Xie**. **Staged Compilation with Module Functors**. *29th International Conference on Functional Programming*.
- ICFP'24 **Ningning Xie***, Daniel D. Johnson*, Dougal Maclaurin, Adam Paszke. **Parallel Algebraic Effect Handlers**. *29th International Conference on Functional Programming*.
- TyDe'23 Adam Paszke, **Ningning Xie** **Infix-extensible Record Types for Tabular Data**. *8th ACM SIGPLAN International Workshop on Type-Driven Development*.
- ICFP'23 **Ningning Xie**, Leo White, Olivier Nicole, Jeremy Yallop. **MacoCaml: Staging Composable and Compilable Macros**. *28th International Conference on Functional Programming*.
- PLDI'23 Jeremy Yallop, **Ningning Xie**, Neel Krishnaswami. **flap: A Deterministic Parser with Fused Lexing**. *44th Conference on Programming Language Design and Implementation*.
- APLAS'22 Xu Xue, Bruno C. d. S. Oliveira, **Ningning Xie**. **Applicative Intersection Types**. *20th Asian Symposium on Programming Languages and Systems*.
- OOPSLA'22 **Ningning Xie**, Youyou Cong, Kazuki, Ikemori, Daan Leijen. **First-class Names for Effect Handlers**. *37th ACM International Conference on Object-Oriented Programming, Systems, Languages, and Applications*.

- ECOOP'22 Baber Rehman, Xuejing Huang, **Ningning Xie**, Bruno C. d. S. Oliveira. **Union Types with Disjoint Switches**. *36th European Conference on Object Oriented Programming*.
- MLSys'22 **Ningning Xie**, Tamara Norman, Diminik Grewe, Dimitrios Vytiniotis. **Synthesizing Optimal Parallelism Placement and Reduction Strategies on Hierarchical Systems for Deep Learning**. *5th Conference on Machine Learning and Systems*.
- POPL'22 **Ningning Xie**, Matthew Pickering, Andres Löb, Nicolas Wu, Jeremy Yallop, Meng Wang. **Staging with Class: A Specification for Typed Template Haskell**. *49th Symposium on Principles of Programming Languages*.
- ICFP'21 **Ningning Xie**, Daan Leijen. **Generalized Evidence Passing for Effect Handlers: Efficient Compilation of Effect Handlers to C**. *26th International Conference on Functional Programming*.
- PLDI'21 Alex Reinking*, **Ningning Xie***, Leonardo de Moura, Daan Leijen. **Perceus: Garbage Free Reference Counting with Reuse**. *42nd Conference on Programming Language Design and Implementation*. *ACM SIGPLAN Distinguished Paper Award*
- Haskell'20 **Ningning Xie**, Daan Leijen. **Effect Handlers in Haskell, Evidently**. *13th Haskell Symposium*.
- ICFP'20 **Ningning Xie**, Jonathan Brachthäuser, Daniel Hillerström, Philipp Schuster, Daan Leijen. **Effect Handlers, Evidently**. *25th International Conference on Functional Programming*.
- POPL'20 **Ningning Xie**, Richard A. Eisenberg, Bruno C. d. S. Oliveira. **Kind Inference for Datatypes**. *47th Symposium on Principles of Programming Languages*. *ACM SIGPLAN Distinguished Paper Award*
- ECOOP'20 **Ningning Xie**, Bruno C. d. S. Oliveira, Xuan Bi, Tom Schrijvers. **Row and Bounded Polymorphism via Disjoint Polymorphism**. *34th European Conference on Object Oriented Programming*, ECOOP 2020.
- TOPLAS'20 **Ningning Xie**, Xuan Bi, Bruno C. d. S. Oliveira, Tom Schrijvers. **Consistent Subtyping for All**. *ACM Transaction on Programming Languages and Systems*, TOPLAS 2020.
- ICFP'19 Gert-Jan Bottu, **Ningning Xie**, Koar Marntirosian, Tom Schrijvers. **Coherence of Type Class Resolution**. *24th International Conference on Functional Programming*.
- ESOP'19 Xuan Bi, **Ningning Xie**, Bruno C. d. S. Oliveira, Tom Schrijvers. **Distributive Disjoint Polymorphism for Compositional Programming**. *28th European Symposium on Programming*, ESOP 2019.
- ESOP'18 **Ningning Xie**, Xuan Bi, Bruno C. d. S. Oliveira. **Consistent Subtyping for All**. *27th European Symposium on Programming*. *Selected for Special Issue of ACM Transaction on Programming Languages and Systems*
- ESOP'18 **Ningning Xie**, Bruno C. d. S. Oliveira. **Let Arguments Go First**. *27th European Symposium on Programming*, ESOP 2018.

Grants, Awards, and Honors

- 2023-2028 NSERC Discovery Grant
- 2021 ACM SIGPLAN Distinguished Paper Award (PLDI 2021)
- 2020 EECS Rising Stars, UC Berkeley
- 2020 ACM SIGPLAN Distinguished Paper Award (POPL 2020)
- 2020 Special issue of ACM Transactions on Programming Languages and Systems (TOPLAS)

Professional Activities

Program Chair

- Haskell 2025 18th ACM SIGPLAN International Symposium on Haskell
- HIW 2021 13th Haskell Implementors' Workshop

Organizer

- PLDI 2025 Artifact Evaluation Co-Chair.
POPL 2025 Publicity Chair.
ICFP 2024 Programming Languages Mentoring Workshop (PLMW) Co-chair.
PLDI 2024 Artifact Evaluation Co-Chair.

Program Committee

- 2025 ASPLOS. PLDI. ICFP.
2024 TACAS. WITS. POPL SRC. OCaml.
2023 POPL. PLDI. PADL. TFP. TyDe.
2022 ICFP. TFP. FLOPS. Scala. ML. HOPE. SPLASH SRC.
2021 PADL
2019 Haskell. HIW.

Steering Committee

- 2020-2023 Haskell Symposium Steering Committee

Invited Talks

Haskell for choice-based learning

- Sept 2023 Invited Keynote. Haskell Symposium @ ICFP 2024
Sept 2023 NII Shonan Meeting.

Efficient Compilation of Algebraic Effect Handlers.

- April 2023 UC Berkeley Programming Systems Seminar

MacoCaml: Staging Composable and Modular Macros

- Oct 2022 McGill PL Seminar

Language Theory into Practice, A Play in Three Acts

- 2022 Georgia Tech, MPI-SWS, EPFL, University of Wisconsin-Madison, ETH Zurich, University of Waterloo, CMU, Microsoft Research Redmond, University of Toronto, Cornell University, Google Brain

Staging with Class: A Specification of Typed Template Haskell

- May 2022 YOW! Lambda Jam 2022.
Dec 2021 Programming Languages Seminar. EPFL.

Efficient Compilation of Algebraic Effect Handlers.

- Oct 2021 8th International Workshop on Dependable and Secure Software Systems. ETH Zurich.

Perceus: Garbage Free Reference Counting with Reuse.

- Mar 2021 Laboratory for Foundations of Computer Science. The University of Edinburgh.

Teaching

- Fall 2024 [Instructor] CSC2126: Topics in Programming Languages (Types and Effects)
Fall 2024 [Instructor] CSC324: Principles of Programming Languages
Winter 2024 [Instructor] CSC324: Principles of Programming Languages
Fall 2023 [Instructor] CSC2125: Types and Programming Languages
Spring 2019 [Teaching Assistant] Principles of Programming Languages, *University of Hong Kong*
Fall 2017 [Teaching Assistant] Functional Programming, *University of Hong Kong*

Graduate Students

2024- Andong Fan

2024- Ethan Bodzione

2024- Yanning Chen

MSc

2024- Youzhang (Mark) Sun

2024- Maite Kramarz

Alumni

MSc 2025 Tsung-Ju Chiang