

# Ningning Xie

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## Professional Positions

- 2023- **Assistant Professor.**  
University of Toronto, Toronto, Canada.
- 2022- **Research Scientist.**  
Google Brain.
- 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.

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## Education

- 2021 **Ph.D., Computer Science.**  
University of Hong Kong, Hong Kong  
Advisor: Bruno. C. d. S. Oliveira.
- 2015 **B.S. (with Honors), Computer Science and Technology.**  
Zhejiang University, Hangzhou, China  
GPA 3.9/4.0 (Rank 2%). Outstanding Graduate.

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## Selected Honors and Awards

- 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)

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## Publications

- APLAS'22 Xu Xue, Bruno C. d. S. Oliveira, **Ningning Xie**. **Applicative Intersection Types**. *20th Asian Symposium on Programming Languages and Systems*, APLAS 2022.
- 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*, OOPSLA 2022 (conditionally accepted).
- 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*, ECOOP 2022.
- 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*, MLSys 2022.

- 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*, POPL 2022.
- 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*, ICFP 2021.
- PLDI'21 **Ningning Xie\***, Alex Reinking\*, Leonardo de Moura, Daan Leijen. *Perceus: Garbage Free Reference Counting with Reuse*. *42nd Conference on Programming Language Design and Implementation*, PLDI 2021. **ACM SIGPLAN Distinguished Paper Award**
- Haskell'20 **Ningning Xie**, Daan Leijen. *Effect Handlers in Haskell, Evidently*. *13th Haskell Symposium*, Haskell 2020.
- ICFP'20 **Ningning Xie**, Jonathan Brachthäuser, Daniel Hillerström, Philipp Schuster, Daan Leijen. *Effect Handlers, Evidently*. *25th International Conference on Functional Programming*, ICFP 2020.
- POPL'20 **Ningning Xie**, Richard A. Eisenberg, Bruno C. d. S. Oliveira. *Kind Inference for Datatypes*. *47th Symposium on Principles of Programming Languages*, POPL 2020. **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*, ICFP 2019.
- 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*, ESOP 2018. **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.
- Workshops
- PEPM'22 **Ningning Xie\***, Daniel D. Johnson\*, Dougal Maclaurin, Adam Paszke. *Parallel Algebraic Effect Handlers*. *ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation*, PEPM 2022, co-located with POPL 2022.
- HOPE'21 **Ningning Xie**, Youyou Cong, Daan Leijen. *First-class Names for Effect Handlers*. *ACM SIGPLAN Workshop on Higher-Order Programming with Effects*, HOPE 2021, co-located with ICFP 2021.
- HIW'18 **Ningning Xie**, Richard A. Eisenberg. *Coercion Quantification*. *10th Haskell Implementors' Workshop*, HIW 2018, co-located with ICFP 2018.
- TFP'17 **Ningning Xie**, Bruno C. d. S. Oliveira. *Towards Unification for Dependent Types*. *18th Symposium on Trends in Functional Programming*, TFP

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## Professional Activities

### Organizer

- MFPS 2022 Special session organizer on algebraic effects. 38th International Conference on Mathematical Foundations of Programming Semantics
- Program Chair**
- HIW 2021 13th Haskell Implementors' Workshop
- Program Committee**
- PADL 2023 25th International Symposium on Practical Aspects of Declarative Languages
- TFP 2023 24th Symposium on Trends in Functional Programming
- PLDI 2023 44th Conference on Programming Language Design and Implementation
- POPL 2023 50th Symposium on Principles of Programming Languages
- SPLASH 2022 Student Research Competition, 37th ACM International Conference on Object-Oriented Programming, Systems, Languages, and Applications
- ICFP 2022 27th International Conference on Functional Programming
- FLOPS 2022 16th International Symposium on Functional and Logic Programming
- TFP 2022 23rd Symposium on Trends in Functional Programming
- Scala 2022 13th Scala Symposium
- HOPE 2022 9th Workshop on Higher-Order Programming with Effects
- ML 2022 9th Workshop on Higher-Order Programming with Effects
- PADL 2021 23rd International Symposium on Practical Aspects of Declarative Languages
- Haskell 2019 12th Haskell Symposium
- HIW 2019 11th Haskell Implementor's Workshop
- Steering Committee**
- 2020-2023 Haskell Symposium Steering Committee
- Ph.D. Thesis Committee**
- 2022 Nicolas Stucki, Scalable Metaprogramming in Scala 3, EPFL (advisor: Martin Odersky)

## Invited Talks

### Language Theory into Practice, A Play in Three Acts

- April 2022 Google Brain
- April 2022 Cornell University
- April 2022 University of Toronto
- April 2022 Microsoft Research Redmond
- Mar 2022 CMU
- Mar 2022 University of Waterloo
- Mar 2022 ETH Zurich
- Mar 2022 University of Wisconsin-Madison
- Feb 2022 EPFL
- Feb 2022 Max Planck Institute for Software Systems
- Feb 2022 Georgia Tech

### 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.

- Dec 2021 International Symposium on High Confidence Software. Peking University.

- 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.  
**Type-based Language Design.**
- Dec 2020 Programming Languages Seminar. Peking University.
- Dec 2020 John Hopcroft Center for Computer Science. Shanghai Jiao Tong University.  
**Dependent Types in Haskell.**
- Dec 2018 Hong Kong Functional Programming Meetup. Hong Kong.  
**Consistent Subtyping for All.**
- May 2018 Penn PLClub. University of Pennsylvania. PA, US.

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## Teaching

- Aug 2021 [Tutorial] Programming with Effect Handlers and FBIP in Koka @ ICFP 2021
- Nov 2019 [Instructor] Haskell 101, *Google, New York City*
- Spring 2019 [Teaching Assistant] Principles of Programming Languages, *University of Hong Kong*
- Fall 2017 [Teaching Assistant] Functional Programming, *University of Hong Kong*

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## Mentoring

- June 2022 [Panelist] Programming Language Mentoring Workshop (PLMW) @ PLDI 2022
- Oct 2021- [Mentoring] SIGPLAN Long-Term Mentoring Program (SIGPLAN-M)
- Jan 2021 [Mentoring] Programming Language Mentoring Workshop (PLMW) @ POPL 2021
- Nov 2020 [Mentoring] Programming Language Mentoring Workshop (PLMW) @ SPLASH 2020
- 2020 [Mentoring] Xu Xue (PhD)
- 2020-2022 [Mentoring] Baber Rehman (PhD), Xuejing Huang (PhD)