Ningning Xie

Professional Positions

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

Grants, Awards, and Honors

2023-2028	NSERC Discovery Grant ($217,500 CAD)
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)

Publications

ICFP'23	**Ningning Xie**, Leo White, Olivier Nicole, Jeremy Yallop. MacoCaml: Staging Composable and Compilable Macros. *28th International Conference on Functional Programming*, ICFP 2023.
PLDI'23	Jeremy Yallop, **Ningning Xie**, Neel Krishnaswami. flap: A Deterministic Parser with Fused Lexing. *44th Conference on Programming Language Design and Implementation*, PLDI 2023.
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.

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 Löh, 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

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 (SRC), 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

Journal Reviewer

2023	Science of Computer Programming

Ph.D. Thesis Committee

2022	Nicolas Stucki, Scalable Metaprogramming in Scala 3, EPFL (advisor: Martin Odersky)

Invited Talks

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

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.

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*

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)