HAN XU

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EDUCATION

Peking University, Beijing, China   Sep. 2018 – Jun. 2022

- *B.S.* in Computer Science (Turing Class), GPA 3.804/4
- Related Coursework: Functional Programming (1st year), Design Principles of Programming Languages(1st year), Compiler Principles(3rd year), Advanced Modal Logic(4th year), Axiomatic Set Theory(4th year).
- *Advisor*: Zhenjiang Hu

Princeton University, New Jersey, United States   Sep. 2023 – Present

- *Ph.D.* in Computer Science
- *Advisor*: David Walker

RESEARCH EXPERIENCE

Research Assistant   Oct. 2019 – Jun. 2022

Peking University   Advisor: Zhenjiang Hu

Topic: General Differential Calculus for Programs.

- Designed and implemented the Analytical Differential Calculus.
- Found and proved all the mathematical and syntactical properties.

Research Assistant   Jun. 2021 – Jul. 2023

The University of Hong Kong   Advisor: Bruno C. d. S. Oliveira

Topic: Compositional Programming; Type Difference on Intersection Types; Apartness for Intersecton Types.

- Designed part of the type system of F_i^+ in Compositional Programming.
- Designed the Type Difference and the language $F_i^\backslash$. Wrote all the proofs for Type Difference and $F_i^\backslash$ in Coq.
- Designed the type system and operational semantics of Apart Intersection Types and wrote all the proofs in Coq.

Research Assistant   Oct. 2022 – Present

Peking University   Advisor: Di Wang

Topic: Contextual Modal Types for Higher-Order Resource Analysis.

- Designed the Contextual Modal Type System for Resource Analysis and proved the soundness.

PUBLICATIONS

- **Han Xu**, Xuejing Huang, Bruno C. d. S. Oliveira. Making a Type Difference: Subtraction on Intersection Types as Generalized Record Operations. *In 50th Symposium on Principles of Programming Languages (POPL 2023).* September 2022.
- Andong Fan*, Xuejing Huang*, **Han Xu**, Yaozhu Sun, Bruno C. d. S. Oliveira. Direct Foundations for Compositional Programming *In European Conference on Object-Oriented Programming (ECOOP 2022).* June 2022.
- **Han Xu**, Zhenjiang Hu. Analytical Differential Calculus with Integration, *International Colloquium on Automata, Languages and Programming 2021 (ICALP 2021)*, Glasgow, Scotland, July 2021.

Talks

- Making a Type Difference: Subtraction on Intersection Types as Generalized Record Operations, *POPL 2023*, Boston, Massachusetts, January 2023.
- Analytical Differential Calculus with Integration, *ICALP 2021*, Glasgow, Scotland, July 2021, Virtual Event.

Services

- **Journal Reviewer**: JFP'23, JFP'24

Skills

- Programming Languages: Coq, Lisp, C++, Haskell, Ocaml, LaTeX.
- Languages: Mandarin-Native, English-Fluent, Japanese-Fluent(N1).