Xuan Bi

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RESEARCH FIELDS Programming Language Design, Type Systems, Functional Programming, Gradual Typing, Program Verification

EDUCATION

The University of Hong Kong, Hong Kong, China

Ph.D. in Computer Science — Sep. 2014 - Nov. 2018

- Thesis Topic: *Disjoint Intersection Types: Theory and Practice*
- Advisors: Dr. Bruno C. d. S. Oliveira and Prof. T.H. Tse

Zhejiang University, Hangzhou, China

B.S. in Computer Science and Engineering — Sep. 2010 - Aug. 2014

- Cum. GPA: 3.9 out of 4.0
- He Zhijun Honor Class
- Thesis Advisor: Prof. Huajun Chen

Simon Fraser University, Vancouver, Canada

Exchange in Computing Science — Sep. 2012 - Apr. 2013

- Cum. GPA: 3.9 out of 4.0

PUBLICATIONS

1. **Xuan Bi**, Bruno C. d. S. Oliveira, Tom Schrijvers. **The Essence of Nested Composition.** *In European Conference on Object-Oriented Programming (ECOOP 2018)*.
2. **Xuan Bi**, Bruno C. d. S. Oliveira. **Typed First-Class Traits.** *In European Conference on Object-Oriented Programming (ECOOP 2018)*.
3. Ningning Xie, **Xuan Bi**, Bruno C. d. S. Oliveira. **Consistent Subtyping for All.** *In European Symposium on Programming (ESOP 2018)*.
4. Yanpeng Yang, **Xuan Bi**, Bruno C. d. S. Oliveira. **Unified Syntax with Iso-Types.** *In Asian Symposium on Programming Languages and Systems (APLAS 2016)*.
5. Tomas Tauber, **Xuan Bi**, Zhiyuan Shi, Weixin Zhang, Huang Li, Zhenrui Zhang, Bruno C. d. S. Oliveira. **Memory-efficient Tail Calls in the JVM with Imperative Functional Objects.** *In Asian Symposium on Programming Languages and Systems (APLAS 2015)*.
6. Xi Chen, Huajun Chen, **Xuan Bi**, Peiqin Gu, Jiaoyan Chen, Zhaohui Wu. **BioTCM-SE: A Semantic Search Engine for the Information Retrieval of Modern Biology and Traditional Chinese Medicine.** *Comp. Math. Methods in Medicine 2014*.

Drafts

1. **Xuan Bi**, Ningning Xie, Bruno C. d. S. Oliveira, Tom Schrijvers. **Distributive Disjoint Polymorphism for Compositional Programming.** *Submitted to ESOP'19*.
2. Ningning Xie, **Xuan Bi**, Bruno C. d. S. Oliveira, Tom Schrijvers. **Consistent Subtyping for All.** *Submitted to TOPLAS'19*.

Projects

GPC: **G**radually **P**olymorphic **C**alculus
- Github link
- We proposed the first design of combining gradual typing with implicit higher-rank polymorphism. **GPC** is implemented in Haskell.

SEDEL: Type system for first-class traits
- Github link
- We proposed the first design of typed first-class traits with support for dynamic inheritance, abstract methods, etc. **SEDEL** is implemented in Haskell.

NeColus: **Ne**sted **Co**mposition calcu**lus**
- Github link
- We proposed a simple calculus that features disjoint intersection types and nested composition. Type safety and coherence are verified in the Coq proof assistant.

FCore: Research middleware compiler from System F-based languages to Java
- Github link
- We proposed a JVM implementation of System F with support for tail-call elimination. **FCore** is implemented in Haskell and Java.

Programming Skills

Working Knowledge: Haskell • Java • Coq
Basic Knowledge: Scala • Agda • Idris • Racket • C • Python

Teaching

Teaching Assistant Fall 2017, Spring 2017
COMP 3258: Functional Programming
Instructor: Dr. Bruno C. d. S. Oliveira

Teaching Assistant Fall 2016, Spring 2015, Fall 2014
COMP 3259: Principles of Programming Languages
Instructor: Dr. Bruno C. d. S. Oliveira

Professional Service

- ESOP 2017, subreviewer
- SBLP 2016, subreviewer

Scholarships & Awards

- Conference Support for Research Postgraduate Students Apr. 2018
- Postgraduate Scholarship (PGS) Sep. 2014 - Aug. 2018

Extracurricular Experience

ECOOP Netherlands, 2018
- **Student volunteer**

Morgan Stanley Hong Kong, 2017

- **Lead student helper**, in charge of coordinating student tasks for the talk by Dr. Bjarne Stroustrup, Father of C++

DeepSpec Summer School USA, 2017

- **Funded participant** of the first DeepSpec Summer School on Verified Systems

Hong Kong Functional Programming Meetup Hong Kong

- **Invited speaker**, talk titled "Programming with dependent types in Idris"
- **Invited speaker**, talk titled "New Buzz in Haskell Reloaded"