

RESEARCH INTERESTS

I am broadly interested in interactive proof assistants, type theory and programming languages, program verification and synthesis. My research agenda revolves around developing language-based techniques to make it easier to write programs that require strong guarantees of correctness and security.

EDUCATION

- Purdue University
Ph.D. candidate in Computer Science, advised by Benjamin Delaware 2017 – 2024 (expected)
- Sichuan University
B.S. in Computer Science (top 1%) 2009 – 2013

PUBLICATIONS

Note: In recent years, the programming languages research community has been developing an additional review process for software artifacts that accompany a paper. This optional process typically awards the following badges:

^A indicates the artifact is available on a publicly accessible archival repository,

^F indicates the artifact was documented, consistent, complete, and exercisable with respect to the claims in the paper,

^R indicates the artifact was of particularly high quality, such that reuse and repurposing is facilitated, and

^V indicates the artifact can be used to replicate the main results of the paper.

- Taypsi: Static Enforcement of Privacy Policies for Policy-Agnostic Oblivious Computation
Qianchuan Ye and Benjamin Delaware
Proceedings of the 2024 ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2024)
<https://doi.org/10.1145/3649861> ^{ARV}
- A HAT Trick: Type-based Verification of Representation Invariants Using Symbolic Finite Automata
Zhe Zhou, **Qianchuan Ye**, Benjamin Delaware and Suresh Jagannathan
Proceedings of the 45th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2024)
<https://doi.org/10.1145/3656433> ^{AR}
- Taype: A Policy-Agnostic Language for Oblivious Computation
Qianchuan Ye and Benjamin Delaware
Proceedings of the 44th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2023)
<https://doi.org/10.1145/3591261> ^{AR}
- Oblivious Algebraic Data Types
Qianchuan Ye and Benjamin Delaware
Proceedings of the 49th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2022)
<https://doi.org/10.1145/3498713> ^{AR}
- RHLE: Modular Deductive Verification of Relational $\forall\exists$ Properties
Robert Dickerson, **Qianchuan Ye**, Michael K. Zhang, and Benjamin Delaware
Proceedings of the 20th Asian Symposium on Programming Languages and Systems (APLAS 2022)
https://doi.org/10.1007/978-3-031-21037-2_4 ^{AFR}
- HACCLE: Metaprogramming For Secure Multi-party Computation
Yuyan Bao, Kirshanthan Sundararajah, Raghav Malik, **Qianchuan Ye**, Christopher Wagner, Fei Wang, Mohammad Hassan Ameri, Donghang Lu, Alexander Seto, Benjamin Delaware, Roopsha Samanta, Aniket Kate, Christina Garman, Jeremiah Blocki, Pierre-David Letourneau, Benoit Meister, Jonathan Springer, Tiark Rompf, Milind Kulkarni

Proceedings of the 20th ACM SIGPLAN International Conference on Generative Programming: Concepts and Experiences (GPCE 2021)

<https://doi.org/10.1145/3486609.3487205>

- Narcissus: Correct-by-Construction Derivation of Decoders and Encoders from Binary Formats
Benjamin Delaware, Sorawit Suriyakarn, Clément Pit-Claudel, **Qianchuan Ye**, and Adam Chlipala
Proceedings of the 24th ACM SIGPLAN International Conference on Functional Programming (ICFP 2019)
<http://doi.org/10.1145/3341686> ^{AF}
- A Verified Protocol Buffer Compiler
Qianchuan Ye and Benjamin Delaware
Proceedings of the 8th ACM SIGPLAN International Conference on Certified Programs and Proofs (CPP 2019)
<http://doi.org/10.1145/3293880.3294105>

WORKSHOPS

- Scrap your boilerplate definitions in 10 lines of Ltac!
Qianchuan Ye and Benjamin Delaware
The Eighth International Workshop on Coq for Programming Languages (CoqPL 2022)
<https://github.com/ccyip/coq-idt>

DISSERTATIONS

- Language-Based Techniques for Policy-Agnostic Oblivious Computation
Qianchuan Ye
PhD Dissertation, Purdue University, April 2024
<https://doi.org/10.25394/pgs.25676727.v1>

ACADEMIC SERVICE

Artifact Evaluation Committee Member	<i>ICFP 2024</i>
External Reviewer	<i>CPP 2022</i>
Artifact Evaluation Committee Member	<i>ICFP 2022</i>
Artifact Evaluation Committee Member	<i>POPL 2020</i>

TEACHING

Teaching Assistant, CS565: Programming Languages @Purdue	<i>Fall 2018 and Fall 2020</i>
Teaching Assistant, CS182: Foundations of Computer Science @Purdue	<i>Fall 2017, Spring 2018 and Spring 2021</i>

INDUSTRIAL EXPERIENCE

- TP-Link Technologies Co., Ltd.
Software Engineer *2013 – 2017*
Embedded system development for networking devices; worked on Linux kernel, drivers and bootloaders, network protocols for roaming and QoS, software framework for routers, etc.

AWARDS AND HONORS

Phi Kappa Phi	<i>2024</i>
Bilsland Dissertation Fellowship	<i>2023 – 2024</i>
ACM SIGPLAN PAC Grant	<i>2022</i>
Purdue Graduate School Summer Research Grant	<i>2021</i>
China National Scholarship	<i>2012</i>
Third Prize, China National Mathematics Olympiad	<i>2008</i>