

EDUCATION

- **University of Illinois at Chicago** USA
Doctor of Philosophy in Computer Science Jan 2021 - present
- **University of Melbourne** Australia
Master of Philosophy in Computing and Information Systems Jun 2018 - Dec 2020

TECHNICAL SKILLS

- **Theoretical Skills:** Concurrency, Programming Languages, Formal Methods, Program Verification, Separation Logic
- **Programming Languages:** C/C++, OCaml, Python, Ruby, Java
- **Interactive Theorem Proving:** Coq, Isabelle
- **Separation Logic Framework:** Iris, Verified Software Toolchain (VST)

RESEARCH EXPERIENCE

- **Department of Computer Science - University of Illinois at Chicago** USA
Research Assistant - Advisor: Prof. William Mansky Jan 2021 - Present
 - **VST & concurrency:** Extend VST's soundness proof and logic to support concurrency, atomic operations, and weak memory.
 - **RefinedVST:** Build an annotation-based proof tool on top of VST using the framework of RefinedC.
 - **Verification of Concurrent Search Structure Templates:** Implement the template approach in VST and use it to prove the correctness of C implementations of fine-grained concurrent data structures.
 - **Developing specifications for Relaxed libraries, built on top of Iris:** Combine logical atomicity together with richer partial orders to develop stronger specifications in the weaker memory model of Repaired C11.
- **School of Computing and Information Systems - University of Melbourne** Australia
Research Student - Advisors: Prof. Toby Murray and Prof. Benjamin Rubinstein Jun 2018 - Dec 2020
 - **Foundations for Reasoning about Holistic Specifications:** Formalized a theory known as "Holistic Specifications" in Isabelle/HOL for describing the correctness of such programs. Laying the foundation for developing future methods to verify programs against Holistic Specifications.
- **Programming Languages Lab - National University of Singapore** Singapore
Research Assistant - Advisor: Prof. Joxan Jaffar Feb 2016 - Dec 2017
 - **Dynamic Symbolic Analysis for Security Vulnerabilities in Web Applications:** Worked on program analysis techniques using symbolic execution to detect security vulnerabilities in Web applications (Javascript).
- **Echizen Laboratory - Content Security Lab - National Institute of Informatics** Japan
Research Internship - Advisor: Prof. Isao Echizen Feb 2015 - Aug 2015
 - **Lattice-based Cryptography and its applications:** Worked on developing applications related to computational problems on lattices, specifically Short Integer Solution and Learning With Errors.

PUBLICATIONS

- **Compositional Verification of Concurrent C Programs with Search Structure Templates:** Duc-Thân Nguyen, Lennart Beringer, William Mansky, Shengyi Wang. In Proceedings of the 43rd ACM SIGPLAN International Conference on Certified Programs and Proofs (CPP) 2024
- **Compass: Strong and Compositional Library Specifications in Relaxed Memory Separation Logic:** Hoang-Hai Dang, Jaehwang Jung, Jaemin Choi, Duc-Thân Nguyen, William Mansky, Jeehoon Kang, and Derek Dreyer. In Proceedings of the 43rd ACM SIGPLAN International Conference on Programming Language Design and Implementation (PLDI) 2022
- **Efficient Privacy Preserving Data Audit in Cloud:** Dang, Hai-Van, Thai-Son Tran, Duc-Thân Nguyen, Thach V. Bui, and Dinh-Thuc Nguyen. In Advanced Computational Methods for Knowledge Engineering, pp. 185-196. Springer International Publishing, 2015.
- **Attacks on Low Private Exponent RSA: An Experimental Study:** Thuc D. Nguyen, Than Duc Nguyen, Long D. Tran. In Computational Science and Its Applications (ICCSA), 2013 13th International Conference on Computational Science and Its Applications, pp. 162-165. IEEE Computer Society, 2013.

HONORS AND AWARDS

- Student Travel Grant - SIGPLAN Programming Languages Mentoring Workshop at PLDI, San Diego, USA (2022)
- Graduate Assistantship - University of Illinois at Chicago, IL, USA (2021)
- Melbourne School of Engineering Studentship - University of Melbourne, VIC, Australia (2018)
- Melbourne Research Scholarship - University of Melbourne, VIC, Australia (2018)
- Student Travel Grant - SIGPLAN Programming Languages Mentoring Workshop at ICFP, Nara, Japan (2016)

ACTIVITIES

- ICFP'24, PLDI'25 Artifact Evaluation Committee
- Oral presentation @ NJPLS'23