Duc-Than Nguyen

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Education

- **University of Illinois at Chicago** — IL, USA
  Doctor of Philosophy - Computer Science — *2021 - present*
- **University of Melbourne** — VIC, Australia
  Master of Philosophy - Computing and Information Systems — *2018 - 2020*

Technical Skills

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

Research Experience

- **Department of Computer Science - University of Illinois at Chicago** — IL, USA
  Research Assistant — *Jan 2021 - Present*
  - **Verification of Concurrent Search Structure Templates**: Implementing the template approach in the Verified Software Toolchain 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**: Combining 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** — VIC, Australia
  Research Student — *Jun 2018 - Dec 2020*
  - **Foundations for Reasoning about Holistic Specifications**: Investigating how to prove the correctness of computer programs that execute alongside, and may interact with, malicious software. Formalizing 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 — *Feb 2016 - Dec 2017*
  - **Dynamic Symbolic Analysis for Security Vulnerabilities in Web Applications**: Working on program analysis techniques using symbolic execution to detect security vulnerabilities in Web applications (Javascript).
- **Echizen Laboratory - Content Security Lab - National Institute of Informatics** — Tokyo, Japan
  Research Internship — *Feb 2015 - Aug 2015*
  - **Lattice-based Cryptography and its applications**: Working on developing applications related to computational problems on lattices, specifically Short Integer Solution (SIS) and Learning With Errors (LWE).

Publications

- **Compositional Verification of Concurrent C Programs with Search Structure Templates**: Duc-Than Nguyen, Lennart Beringer, William Mansky, Shengyi Wang. In Proceedings of the 13th 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-Than 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-Than 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 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)
- Outstanding Achievement in Research - Vietnam National University, University of Science, Vietnam (2013)

Activities

- Attended virtual conferences: POPL'21, PLDI'21, and in-person conference PLDI'22.
- Attended in-person conference ICCSA'13 in Vietnam, and ICFP'16 in Japan.
- Participated in the South East Asian Mathematical Society (SEAMS) School 2015.
- Founded/Administered the online mathematics forum (mathfriend.org) from 2005 to 2007.