VAN-CHAN NGO

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EDUCATION

INRIA, Rennes, France *August 2014*
Ph.D in Computer Science & Engineering
Programming Language, Compiler, and Formal Verification for Embedded and Safety-Critical Systems
First Class Honors

Université de Grenoble, Verimag, Grenoble, France *June 2008*
Masters in Computer Science & Engineering
Embedded Software and Systems
French Government Scholarship, Évariste Galois Program

Hanoi University of Technology, Hanoi, Vietnam *July 2005*
Engineer Degree in Computer Engineering
Information Systems and Communication, Centre of Talented Training - PFIEV
First Class Honors with Congratulations of the Ministry of Education

EXPERIENCE

Carnegie Mellon University *2016 - Present*
Research Fellow, Computer Science *Pittsburgh, PA, US*

· Resource bounds (time, memory, ...) static analysis for imperative and functional programs for detecting security vulnerability (time side-channel attacks, stack overflow,...)
· Static analysis and model checking for probabilistic programs

INRIA France *2014 - 2015*
R&D Engineer *Rennes, France*

· Design and implementation tools applying Statistical Model Checking for SystemC models
· Realization of High-Level Petri Net models in SystemC for performance analysis of microprocessor designs at level of transactions
· Probabilistic temporal assertion-based verification of SystemC models

INRIA France *2011 - 2014*
Research Assistant *Rennes, France*

· Correctness of the highly optimizing and industrial synchronous compiler, Signal, which is used in model-based design of real-time and safety-critical systems. Implement the verification framework in OCaml and C++
· Methodology of verification based on the translation validation approach by generating the formal models of clock semantics, data dependencies and value-equivalence for source code program and the compiled program. Then, using several techniques including model checking, theorem proving, graph transformation to prove the preservations of clock semantics, data dependencies and value-equivalence of variables
· Teaching Object-Oriented Programming in C++ and formal methods

Tech Propulsion Lab USA *2010 - 2011*
Software Architect *Saigon Branch, Vietnam*

· Design and development of embedded mobile software
· Technical designs of mobile applications on iOS and Android
· Project management in the mobile development department

IBM Zurich Lab and ZISC *2008 - 2010*
Research Assistant *Zurich, Switzerland*

· Formally verifying and certifying the design of secure boot processes in IBM mainframes
· Methodology of verification by generating the formal models of the boot processes using the language of the model checker Spin. The formal models are used to verify the security properties of the boot process. This work is applied on the AIX mainframes of IBM

Verimag Lab *2007 - 2008*
Internship *Grenoble, France*

· A general framework to verify automatically the secure property IND-CPA property of asymmetric encryption schemes, to be suitable for computer tools
· Automated verification framework to prove formally the IND-CPA security property of asymmetric encryption schemes. The framework represents the encryption schemes as *frame* in cryptographic π-calculus, and formalize the IND-CPA property as a equivalent relation between two frames

IBM Vietnam *2006 - 2007*
Senior Software Engineer *Hanoi, Vietnam*

· Working on text search engine of data base management DB2 of IBM

FPT Software *2005 - 2006*
Software Engineer *Hanoi, Vietnam*

· Working on embedded systems for navigation

Security Systems, MISOFT *2003 - 2005*
Software Developer *Hanoi, Vietnam*

· Developing a distributed firewall as an operation system based on the package filtering library and the Linux kernel in C++ and Python

Hanoi University of Technology *2000 - 2003*
Tutor *Hanoi, Vietnam*

· Student teaching in Mathematics and Physics

TECHNICAL STRENGTHS

· **Programming Languages**. Strong knowledge: C/C++, OCaml - Familiarity: Assembly, Java, Python
· **Toolchains**. Strong knowledge: GCC, LLVM Compiler Infrastructure
· **Formal Methods & Modeling Languages**. Strong knowledge: Synchronous Languages, Logics and Temporal Logics, Model Checking, Theorem Proving, Static Analysis - Familiarity: Verilog, SystemC
· **Formal Method Tools**. SPIN, SMV, UPAAL, PRISM, SMC Plasma Lab, Yices, Z3, Coq, Frama-C
· **Embedded Software Development**. Familiarity: AVR, Arduino, RTLinux, FreeRTOS

LANGUAGES

English - Advance   **French** - Advance   **Vietnamese** - Mother-tongue

AWARDS

Ph.D scholarship, INRIA France
DEA scholarship from the French government, Université de Grenoble, France
Masters scholarship from the Italian government, Politecnico di Milano, Italy
Masters scholarship from SamSung company, ICU-KAIST, South Korea
Scholarships from Hanoi University of Technology for excellent academic results