Department of Software Engineering

A brief introduction

Overview

Faculty

The department of Software Engineering has a faculty of committed professionals including three associated professors. Ten of the faculty obtained their PhD degree in countries such as Germany, Hungary, Norway, Japan, and France. They bring to the department not only scientific knowledge but also professionalism learned from international environment. The department is also home to about ten doctoral candidates in Software Engineering.

At undergraduate level, apart from core courses such as Object-oriented Programming and Software Engineering, the department staff also provide advanced courses with knowledge and skills required for professionals in software engineering: Object-Oriented Analysis and Design, Software Testing and Quality Assurance, Software Project Management, User Interface Design, Software Architecture, Formal Methods, Embedded programming and real-time systems Functional Programming, …

At postgraduate level, the department provides courses that extend undergraduate level as well as courses that are research-oriented or industry-oriented students.

Main research interests

Our faculty members are active in the following topics: automated testing, software specification and verification, software architecure, program analysis, SMT solvers, domain specific language, realtime and embedded systems, modern software process, and formal methods in general.

Objectives

Our current objectives are:

- Increase the number of research papers published, especially in highly recognized journals and international conferences.
- Research groups on application areas such as tools and software processes, solving real-world problems that can be directly applied to the IT industry.
- Continue improving and adapting teaching method and materials in order to increase professionalism and competiveness of graduates.
- Build research labs in software engineering.

Projects and publications

R&D projects

- Project cost estimation based on case based reasoning, sponsored by Mitani Sangyo, Japan, PGS. TS. Nguyễn Việt Hà, 2008.
- Assesss quality of fixed-point function vs floating-point ones, sponsored by Panasonic Vietnam, PGS. TS. Nguyễn Việt Hà, PGS. TS. Trương Ninh Thuận, TS. Trương Anh Hoàng, 2009.
- Parameterized unit test tool based on Java PathFinder and UML 2.x sequence diagram conformace checking tool, sponsored by Mitani Sangyo, Japan, TS. Trương Anh Hoàng, PGS. TS. Nguyễn Việt Hà phụ trách, 2010.
- Design for scalability on cloud computing platform, sponsored by Panasonic Vietnam, TS. Trương Anh Hoàng, TS. Võ Đình Hiếu, 2011.
- Methods and tools for quality assurance for component-based software at Mitani Sangyo, sponsored by Mitani Sangyo, Japan, TS. Phạm Ngọc Hùng, 2013.
- Building open source school management system, sponsored by Viettel, TS. Trương Anh Hoàng phụ trách, 2011.

Basic research projects

- Methods and tools for component-based software engineering, sponsored by VNU, PGS. TS. Nguyễn Việt Hà, 2009.
- Software verification in evolution context, sponsored NAFOSTED, PGS. TS. Nguyễn Việt Hà, 2010.
- Methods and tools for program analysis and application in training, sponsored by VNU, PGS. TS. Nguyễn Việt Hà, 2013.
- Other small VNU and UET projects

Selected publications

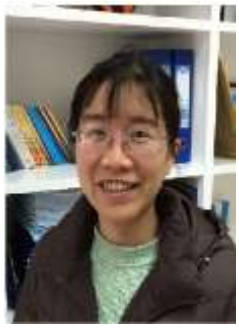
1. Ninh-Thuan Truong, Viet Ha Nguyen: **An Approach to Checking the Compliance of User Permission Policy in Software Development.** International Journal of Software Engineering and Knowledge Engineering 23(8): 1139-1152 (2013)
2. Marc Bezem, Dag Hovland, Hoang Truong: **A type system for counting instances of software components.** Theor. Comput. Sci. 458: 29-48 (2012)
3. Pham Ngoc Hung, Viet Ha Nguyen, Toshiaki Aoki, Takuya Katayama: **On Optimization of Minimized Assumption Generation Method for Component-Based Software Verification.** IEICE Transactions 95-A(9): 1451-1460 (2012)
4. Thu-Trang Nguyen, Ninh-Thuan Truong, Viet Ha Nguyen: **Verifying Java Object Invariants at Runtime.** International Journal of Software Engineering and Knowledge Engineering 21(4): 605-619 (2011)
5. Pham Ngoc Hung, Viet Ha Nguyen, Toshiaki Aoki, Takuya Katayama: **A Minimized Assumption Generation Method for Component-Based Software Verification.** IEICE Transactions 93-D(8): 2172-2181 (2010)
6. Duc-Hanh Dang, Anh-Hoang Truong, Martin Gogolla: **Checking the Conformance between Models Based on Scenario Synchronization.** J. UCS 16(17): 2293-2312 (2010)

7. Pham Ngoc Hung, Toshiaki Aoki, Takuya Katayama: **Modular Conformance Testing and Assume-Guarantee Verification for Evolving Component-Based Software.** IEICE Transactions 92-A(11): 2772-2780 (2009)
8. Thi Huyen Chau Nguyen, Pascal Richard, Enrico Bini: **Approximation techniques for response-time analysis of static-priority tasks.** Real-Time Systems 43(2): 147-176 (2009)
9. Enrico Bini, Thi Huyen Chau Nguyen, Pascal Richard, Sanjoy K. Baruah: **A Response-Time Bound in Fixed-Priority Scheduling with Arbitrary Deadlines.** IEEE Trans. Computers 58(2): 279-286 (2009)
10. Thi Minh Chau Tran, Björn Scheuermann, Martin Mauve: **Lightweight detection of node presence in MANETs.** Ad Hoc Networks 7(7): 1386-1399 (2009)
11. Tanveer Mustafa, Karsten Sohr, Duc-Hanh Dang, Michael Drouineaud, Stefan Kowski: **Implementing Advanced RBAC Administration Functionality with USE.** ECEASST 15 (2008)
12. Ninh-Thuan Truong, Jeanine Souquières: **Verification of UML Model Elements Using B.** J. Inf. Sci. Eng. 22(2): 357-373 (2006)
13. Jifeng He, Dang Van Hung, Geguang Pu, Zongyan Qiu, Wang Yi: **Exploring optimal solution to hardware/software partitioning for synchronous model.** Formal Asp. Comput. 17(4): 443-460 (2005)
14. Dimitar P. Guelev, Dang Van Hung: **On the completeness and decidability of duration calculus with iteration.** Theor. Comput. Sci. 337(1-3): 278-304 (2005)
15. Dimitar P. Guelev, Dang Van Hung: **A Relatively Complete Axiomatisation of Projection onto State in the Duration Calculus.** Journal of Applied Non-Classical Logics 14(1-2): 149-180 (2004)
16. Tu Bao Ho, Ngoc Binh Nguyen: **Nonhierarchical document clustering based on a tolerance rough set model.** Int. J. Intell. Syst. 17(2): 199-212 (2002)
17. Yong Li, Dang Van Hung: **Checking Temporal Duration Properties of Timed Automata.** J. Comput. Sci. Technol. 17(6): 689-698 (2002)
18. Dang Van Hung, Elöd Knuth: **A noninterleaving semantics for communicating sequential processes: a fixed-point approach.** Acta Cybern. 8(3): 293-314 (1988)
19. Jianhua Zhao, Dang Van Hung: **Checking Timed Automata for Linear Duration Properties.** J. Comput. Sci. Technol. 15(5): 423-429 (2000)
20. Dang Van Hung, Zhou Chaochen: **Probabilistic Duration Calculus for Continuous Time.** Formal Asp. Comput. 11(1): 21-44 (1999)
21. Dang Van Hung, Elöd Knuth: **Semi-Commutations and Petri Nets.** Theor. Comput. Sci. 64(1): 67-81 (1989)

Software products

- Trường Nhà – school management software service.
- Fixbag – A Fixpoint Calculator for Quantified Bag Constraints.
- Several other software testing and verification tools.

Faculty

Name	Research interests	Photo
TS. Trương Anh Hoàng hoangta@vnu.edu.vn Head of department	Type systems Program analysis Software verification Software testing Software process	
TS. Trần Thị Minh Châu chauttm@vnu.edu.vn Vice-head of department	Software testing	
PGS.TS. Nguyễn Ngọc Bình nnbinh@vnu.edu.vn	Software engineering Embedded systems Computer architectures KDD, EDA	
PGS.TS. Nguyễn Việt Hà hanv@vnu.edu.vn	Software verification Software testing Agent-based software engineering	

PGS.TS. Trương Ninh Thuận thuantn@vnu.edu.vn	Software specification and verification Software architecture Software security	
TS. Đặng Văn Hưng dvh@vnu.edu.vn	Formal methods Real-time systems Component-based software	
TS. Nguyễn Thị Huyền Châu chaunth@vnu.edu.vn	Real-time systems Scheduling algorithms Program analysis	
TS. Đặng Đức Hạnh hanhdd@vnu.edu.vn	Model-based engineering Model transformations Domain specific language Software verification and testing Formal methods	
TS. Võ Đình Hiếu hieuvd@vnu.edu.vn	Software architecture, Software-oriented architecure, Service composition	

TS. Phạm Ngọc Hùng hungpn@vnu.edu.vn	Software specification and verification Assume guarantee verification Model based software testing Program analysis Software evolution	
TS. Tô Văn Khánh khanhtv@vnu.edu.vn	SAT and SMT algorithms, SMT based software verification and testing, Program analysis	
NCS.ThS. Phạm Thị Kim Dung dungptk@vnu.edu.vn	Software product lines	
NCS.ThS. Vũ Diệu Hương huongvd@vnu.edu.vn	Formal methods	

NCS.ThS. Nguyễn Việt Tân tannv@vnu.edu.vn	Bio-informatics	
CN. Bùi Phi Điệp	Software verification	
CN. Nguyễn Bảo Ngọc	Formal methods Software verification