Tung Dao

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Education

- **Virginia Polytechnic Institute and State University (Virginia Tech)** — Blacksburg, VA
  PhD in Computer Science — *Aug. 2020 – 2023*
- **Virginia Polytechnic Institute and State University (Virginia Tech)** — Blacksburg, VA
  Master of Computer Science — *Fall 2011 - Aug. 2017*
- **Pohang University of Science and Technology (POSTECH)** — Pohang, South Korea
  Master of Computer Science and Engineering — *Aug. 2007 – Aug. 2009*
- **Hanoi University of Science and Technology (HUST)** — Hanoi, Vietnam
  Bachelor of Computer Science — *Sep. 2001 – Jul. 2006*

Experience

- **Cvent** — McLean, Virginia
  Lead Automation/SDET — *2017 - present*
  - **Test Result Reporting Service (TRRS)**: I have led a team to build an internal system that collects and unifies all tests executed across Cvent's products. The system then systematically presents and reports test results. In addition, it is able to detect and identify flaky tests for developers.
  - **Test Data Management (TDM) System**: I have been leading a complex project that unifies all data types across the company's platforms, allowing all kinds of test data, e.g., for performance testing, end-to-end testing, to be generated, consumed, and managed in various automated-testing frameworks.
  - **Defect & Fault Localization (DFL) Tools**: I led a project of developing an automated tool called DFL to localizing cloud-based system faults automatically using machine learning techniques, and software defects using dynamic spectrum-based localization algorithms. In addition, I use tools such as, Sonarqube, Clover, Jacoco for analyzing code quality, in terms, code coverage, potential security and performance bugs. I am also familiar with monitoring tools, such as, Datadog, Splunk, New Relic to analyzing system faults.
  - **Automated Testing Frameworks**: As a member of an Automation team of a large cloud-based tech and software company, I have been involved in developing tools and frameworks for automated testing (e.g., API, integration, UI tests). This work requires sophisticated skills and knowledge in development, infrastructure operations and tools, such as, Jenkins, Docker, AWS, Maven, Selenium, Cucumber. Our tool called Bluecumber written in Java and Javascript, for example, is being used by the company's entire quality engineering department, allowing to automatically executing tens of thousands of tests, per single day.
- **Virginia Tech** — Blacksburg, VA
  Research Assistant — *2013 - 2017*
  - **Software Defects Localization**: We developed a novel approach and its supporting tools (in Java) to utilize both a program's dynamic execution information (e.g., coverage, spectrum, slicing) and static representations (e.g., textual information in source code, bug reports, test-cases) to automatically localize defects more accurately.
  - **Behavior-Driven Development (BDD)**: We developed an advanced approach and its supporting tool called smartBDD that fully automates the process of generating a program's product and test code (in Java) from test scenarios written informally in natural languages (English).

  Teaching Assistant — *2011 - 2013*
  - **Introduction to Problem Solving in Computer Science**: a junior-level class taught by the CS department.
  - **The Theory of Computation**: a senior-level class taught by the CS department.

Graduate Assistant *2012 - 2017*

- **Technical Specialist**: I provided technical supports and advices related to Assistive Technologies software applications and services for students and staff at Virginia Tech.
- **System Administrator**: I was responsible for deploying, maintaining, troubleshooting, and securing the Assistive Technologies lab's IT systems and services.

- **POSTECH University** Pohang, South Korea
  Researcher & Software Engineer *2009 - 2011*
  - **Software Product Line Engineering (SPLE)**: I was in charge of making SPLE approaches more reliable and safety-critical using machine learning techniques. To demonstrate the proposed approaches, I developed fault prediction features in an elevator software product line using the Webca & RapidMiner Java APIs, and the Eclipse-based development tools
  - **Model Checking**: My task was to reverse and upgrade a model checking software written in Java to an advanced one that implemented and integrated symbolic verification mechanisms into SPLE paradigms.

- **VegaSoft Corp.** Hanoi, Vietnam
  Software Developer *2006 - 2007*
  - **Content Management System (CMS) Development**: I was responsible for maintaining and debugging CMS-factory components that allows a CMS to be customized and generated. Technologies included C# programming language, Microsoft's ASP.NET and MSQL databases.
  - **Web-based Service and Application Development**: My job was to develop a virtual stock market system for a private company and a business registration management system for a local government. Tools and technologies were UML modeling languages for designing, and Microsoft's C# & ASP.NET framework and MSQL databases for prototyping.

Projects

- **Software Defects Detection Toolkit**: A set of tools and algorithms written in Java to automatically localize bugs given software product code, bug reports, and test cases.
- **Code Generation Engine for BDD**: A tool called smartBDD that allows fully automatic transformation from test scenarios to implementation and test code in Java.
- **Model Checking for Software Product Lines (SPL)**: A model checker in Java that implements and integrates symbolic verification techniques into SPL.

Programming Skills

- **Languages**: Java, C#, C/C++, Rust, Python, JavaScript, TypeScript, Swift, Ruby, Perl, SQL, R, Matlab, bash, awk & sed, Latex
- **Tools**: Emacs, Eclipse, IntelliJ, Xcode, Visual Studio Code, Git & GitHub, Jenkins, Maven, Docker, AWS, Datadog, Spunk, Clover, SonarQube
- **Frameworks**: ASP.NET, Spring, Hibernate, Bootstrap, Node.js, React/Redux, AngularJs, Ruby on Rails, JUnit, TestNg, Cucumber, Selenium, Tensorflow
- **Databases**: MSSQL, MySQL, Couchbase, MongoDB, PostgreSQL
- **Software Engineering**: Object-oriented Programming, Agile Software Development, Domain Analysis and Design, Software Reuse, and Software Product Line Engineering.
- **Foundations**: Data Structures and Algorithms, Discrete Math
- **OS**: Windows, MacOS, Linux/CentOS

Awards

- **Graduate & Teaching Assistantship**: Virginia Tech *2011 - 2017*
- **Best Paper**: The International Conference on Evaluation of Novel Approaches to Software Engineering *2013*
- **Best Paper**: The Korean Conference on Software Engineering *2010*
- **Research Assistantship**: POSTECH *2007 - 2009*
- **POSCO Asia Fellowship**: For excellent Asian students studying at top universities in South Korea *2007 - 2009*
- **Bronze Medal in Mathematics**: The National Mathematics Contest, Vietnam *2001*
- **First Prize in Mathematics**: The Provincial Mathematics Contest, Hoa Binh, Vietnam *1998*
- **Silver Medal in Mathematics**: The National Mathematics Contest, Vietnam *1994*

Publications

[1] **Tung Dao**, Na Meng, and ThanhVu Nguyen. Triggering Modes in Spectrum-Based Multi-location Fault Localization. The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering **(Industry Paper, ESEC/FSE), 2023.**

[2] **Tung Dao**, Max Wang and Na Meng. Exploring the Triggering Modes of Spectrum-Based Fault Localization: An Industrial Case. *In the 14th IEEE International Conference on Software Testing (ICST), 2021.*

[3] **Tung Dao**, L. Zhang, and N. Meng. How does execution information help with information-retrieval based bug localization? *In the 25th IEEE International Conference on Program Comprehension (ICPC), 2017. (AR: 33%)*

[4] S. Kamalakar, S. H. Edwards, and **Tung M. Dao**. Automatically generating tests from natural language descriptions of software behavior. *In ENASE 2013 - Proceedings of the 8th International Conference on Evaluation of Novel Approaches to Software Engineering, Angers, France, 4-6 July, 2013.* 🏆[1]

[5] **T. M. Dao**, H. Lee, and K. C. Kang. Problem frames-based approach to achieving quality attributes in software product line engineering. In *15th International Software Product Line Conference, 2011. (AR: 29%)*

[6] **Tung Dao** and K. C. Kang. Integrating feature-oriented software product line engineering with problem frames. In *Journal of KISS: Software and Applications, 2011. (Invited paper)*

[7] **Dao Tung M.** and K. C. Kang. Mapping features to reusable components: A problem frames-based approach. In *Proceedings of the 14th International Conference on Software Product Lines: Going Beyond, SPLC'10, 2010. (AR: 31%)*

[8] **Tung Dao** and K. C. Kang. Developing reusable components: An approach with feature model and problem frames. In *The Korean Conference on Software Engineering (KCSE 2010), Phoenix Park, Gangwon, South Korea, Feb 08-10, 2010.* 🏆[2]

References

- **Dr. Na Meng**: Associate Professor, the Dept. of Computer Science, Virginia Tech
- **Dr. Kang Kyo Chul**: Emeritus Professor, the Dept. of Computer Science and Engineering, POSTECH University
- **Dr. Max Wang**: SVP of Engineering, International SOS
- **Dr. ThanhVu Nguyen**: Assistant Professor, the Dept. of Computer Science, George Mason University

[1] ENASE 2013 Best Paper Award
[2] KCSE 2010 Best Paper Award