Duc Minh **Le**

System Security Engineer · Software Architecture Researcher · Software Repository Miner

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Summary

Blends research experience in Software Engineering, Data Mining, and System Security with diverse and practical trainings in the software industries of Vietnam, S.Korea and U.S. to offer solid skills in software design and development. Experiences include (1) mining software repositories/big data, (2) system security, (3) architecture design, recovery, and analysis, (4) software product line engineering.

Work Experience

Bloomberg L.P.

New York, U.S. & London, U.K.

Senior Software Engineer — *July. 2018 - PRESENT*

- Tech Lead of Authentication Platform team at Bloomberg
- Manage Bloomberg Single Sign On system, which is used to authenticate both Bloomberg's workforce & customers
- Work closely with CTO office to secure and extend our systems for new use-cases in Bloomberg's ecosystem & customers' integrations

NEC Laboratories America, Inc.

Princeton, New Jersey, U.S.

Research Intern - Computer Security Group — *May. 2017 - Aug. 2017*

- Analyzed activity logs of PCs in the company's internal networks and extract patterns of safe activities.
- Built different prediction models for those patterns.
- Implemented the approach and integrated into Automated Security Intelligence (ASI) system of NEC.

Veritas Technologies LLC

Culver, California, U.S.

Software Engineering Intern - EV.Cloud Project, Platform Team — *May. 2016 - Aug. 2016*

- Applied topic modeling and machine learning techniques to intelligently suggest retention policies for customers' emails.
- Implemented and verified the proposed approach on Enron dataset using Spark, Hadoop, Cassandra, and Spring Framework.
- Was selected to present at VERITAS Cutting Edge 2016.

Samsung Research America

Irvine, California, U.S.

Research Intern - Advanced Printing Software Lab — *Jun. 2015 - Sep. 2015*

- Completed the end-to-end scenario of extracting UP (Unified Interfaces of Samsung Printers) variability information from an actual MFP (Multi-Functions Printers), representing this in a UP variability model, editing this information, and using it to configure a running simulator instance.
- This involved design and implementation using different technologies: OSGi, EMF, Eclipse plug-ins, REST-ful webservices, UI development.

Dasan Handysoft

Seoul, S.Korea

Software Engineer — *Sep. 2012 - Jun. 2013*

- Designed the server architecture of HandyUC 5.0, a platform providing various types of communication to enterprises, including email, instant messaging, and video conferencing.
- Implemented communication protocols of HandyUC, including XMPP protocol, Handysoft's legacy protocol, and a Http-based protocol.

Research Experience

Architectural Change and Decay in Open-source Software Systems

Los Angeles, CA, U.S.

Software Architectural Research Group, USC — *Feb. 2014 - July. 2018*

- Reversed architectures of over 800 versions of 23 open-source systems, totaling over 120 MLOCs.
- Found evolution trends related to architectural changes in software systems, rate of architectural decay occurrences, correlations among implementation decisions and architectural changes.
- Use implicit problems, e.g., architectural- and code-smells, in combination with explicit problems, e.g. reported issues and bugs, to provide an accurate, systematic and in depth approach to predict potential system problems, particularly bugs.
- Cooperated with Huawei USA in a study of how to adapt the company's codebase to architectural changes in new Android versions.

Privacy Preserving in Distributed Computation

Los Angeles, CA, U.S.

Software Architectural Research Group, USC — *May. 2014 - Aug. 2014*

- Studied sTile, a tile-based architecture, which tackles the problem of distributing computation onto cloud, while providing probabilistic guarantees that agents compromising parts of the cloud wouldn't be able to learn the private data and the nature of the computation.
- Deployed and evaluated a prototype of sTile on several main cloud services (Azure, EC2, Google Cloud).

Impact Analysis of Software Requirement Change based on Feature Relationships — *Pohang, S.Korea*

Software Engineering Lab, POSTECH — *Sep. 2012 - Feb. 2013*

- Reversed feature models based on variation points and variants embedded by C preprocessor.
- Verified consistency between designed models and reversed models and provided refactoring advice.
- Integrated into VULCAL Workbench, a CASE tool that supports software product line engineering.

Patents

Method for creating a feature model from legacy system source code — *Korea*

Kyo Chul Kang, Hyesun Lee, **Duc M. Le** — *July. 2013*

- Patent number: KR101290847B1
- Patent link: https://patents.google.com/patent/KR101290847B1/ko

Selected Publications

Architectural Decay as Predictor of Issue-and Change-Proneness — *Stuttgart, Germany*

Duc M. Le, Suhrid Karthik, Marcelo Schmitt Laser, Nenad Medvidovic — *March. 2021*

- Proceeding of the IEEE International Conference on Software Architecture (ICSA 2021)

Arcade: an extensible workbench for architecture recovery, change, and decay evaluation — *Sacramento, U.S.*

Marcelo Schmitt Laser, **Duc M. Le**, Joshua Garcia, Nenad Medvidovic — *Nov. 2020*

- Proceeding of the ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2021)

A Large-Scale Study of Architectural Evolution in Open-Source Software Systems — *U.S.*

Pooyan Behnamghader*, **Duc M. Le***, Joshua Garcia, Daniel Link, Arman Shahbazian, Nenad Medvidovic — *Jun. 2017*

- Empirical Software Engineering (EMSE) Journal

Architectural-Based Speculative Analysis to Predict Bugs in a Software System — *Austin, U.S.*

Duc M. Le, Nenad Medvidovic — *May. 2016*

- Proceeding of the 38th International Conference on Software Engineering (ICSE), Doctoral Symposium track

An Empirical Study of Architectural Change in Open-Source Software Systems — *Florence, Italy*

Duc M. Le, Pooyan Behnamghader, Joshua Garcia, Daniel Link, Arman Shahbazian, Nenad Medvidovic — *May. 2015*

- Proceeding of the 12th Working Conference on Mining Software Repositories (MSR)

Validating consistency between feature model and its implementation — *Pisa, Italy*

Duc M. Le, Lee Hyesun, Kyo C. Kang, Keun Lee — *Jun. 2013*

- Proceeding of the 13th International Conference on Software Reuse (ICSR)

Honors & Awards

2018	**Best Paper Award**, ICSA 2018	*Seattle, WA, USA*
2016	**'Thesis in Three' - Best Presentation Award**, Doctoral Symposium, ICSE 2016	*Austin, TX, USA*
2015	**Awardee**, ACM SigSoft CAPS Travel Support for attending ICSE 2015	*Florence, Italy*
2014	**Awardee**, USC Doctoral Student Summer Institute Award	*Los Angeles, CA, U.S.*
2013	**Awardee**, Vietnam Education Foundation Fellowship	*U.S.*
2011	**Best Poster Prize**, 3rd International Symposium on IT Convergence Engineering	*Pohang, S.Korea*
2010	**Awardee**, Certificate of Merit for Excellent Graduation Achievement	*Hanoi, Vietnam*

Education

University of Southern California (USC) — *Los Angeles, U.S.*

PhD in Computer Science, Software Architecture Research Group (SoftArch) — *Aug. 2013 - Dec. 2018*

- Advisor: *Prof. Nenad Medvidović* — GPA : 3.87/4.00

Pohang University of Science and Technology (POSTECH) — *Pohang, S.Korea*

MSc in Information Technology Convergence Engineering, Software Engineering Lab (SELab) — *Aug. 2010 - May. 2012*

- Advisor: *Prof. Kyo Chul Kang* — GPA : 95.9/100.0

Hanoi University of Science and Technology (HUST) — *Hanoi, Vietnam*

BSc in Information Technology (Magna Cum Laude) — *Aug. 2005 - May. 2010*

- Advisors: *Assoc. Prof. Huynh Quyet Thang (HUST), Dr. Martin Nordio (ETH Zurich)* — GPA: 8.07/10.00