Thanh Le-Cong

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Education

8/2016 – 7/2021	**Hanoi University of Science and Technology (HUST)** *BE (Honours) in Information Technology* • Advisor: Prof. Huynh Quyet Thang • Thesis: The development of Patch Validation for Automated Program Repair.

Research Interests

My research interests lie at the intersection of *software engineering* and *artificial intelligence*. I am currently focusing on **automated debugging for software and AI systems** with a focus on specific topics such as automated bug detection, localization and repair.

Selected Publications

Note: my name with the asterisk, i.e. Thanh Le-Cong* denotes that I am the co-first author.

⇒ **Conference Papers**

ESEC/FSE'22	Truong-Giang Nguyen, Thanh Le-Cong, Kang Hong Jin, Xuan-Bach D. Le, David Lo; "VulCurator: A Vulnerability-Fixing Commit Detector"; *the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Demonstration Track, ACM, 2022 (5 pages, Acceptance Rate = 56.5%)*
ESEC/FSE'22	Thanh Le-Cong, Kang Hong Jin, Truong-Giang Nguyen, Stefanus Agus Haryono, David Lo, Xuan-Bach D. Le, Quyet-Thang Huynh; "AutoPruner: Transformer-based Call Graph Pruning"; *the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, Research Track, ACM, 2022 (10 pages, Acceptance Rate = 22%)*
ICSME'22	Thanh-Dat Nguyen, Thanh Le-Cong, Xuan Bach D. Le, Duc Minh Luong, David Lo, Quyet-Thang Huynh; "FFL: Fine grained Fault Localization for Student Programs via Syntactic and Semantic Reasoning"; *the 38th IEEE International Conference on Software Maintenance and Evolution, Research Track, IEEE, 2022 (10 pages, Acceptance Rate = 23%)*
ICSE'22	Thanh-Dat Nguyen, Thanh Le-Cong*, ThanhVu H. Nguyen, Xuan Bach D. Le, Huynh Quyet Thang; "Towards the Analysis of Graph Neural Network"; *the 44th IEEE/ACM International Conference on Software Engineering, New Ideas and Emerging Results Track, IEEE, 2022 (5 pages, Acceptance Rate = 26.8%)*
ISSRE'21	Thanh Le-Cong, Xuan Bach D. Le, Quyet Thang Huynh, Phi Le Nguyen; "Usability and Aesthetic: Better Together for Automated Repair of Web Pages"; *the 32nd IEEE International Symposium on Software Reliability Engineering (ISSRE), Research Track. IEEE, 2021 (10 pages, Acceptance Rate = 27.5%)*

⇒ **Works Under Submission**

PLDI'23   Thanh-Dat Nguyen, Thanh Le-Cong, Xuan Bach D. Le, David Lo, ThanhVu H. Nguyen; "GNN-Infer: Property Inference for Graph Neural Networks"; *the 44th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI), ACM, 2023*

SANER'23   Ratnadira Widyasari, Zhipeng Zhao, Thanh Le-Cong, and Hong Jin Kang, David Lo; "Extreme Multi-Label Learning for Topic Recommendation for GitHub Repositories: How far are we?"; *Under Submission, the 30th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), Research Track, 2023*

ICSE'23   Yunbo Lyu, Thanh Le-Cong*, Hong Jin Kang, Ratnadira Widyasari, Zhipeng Zhao, Xuan-Bach D Le, Ming Li, David Lo; "Zero-Shot XML for Identification of Libraries from Vulnerability Reports"; *the 45th IEEE/ACM International Conference on Software Engineering (ICSE), Research Track, 2023*

TSE'22   Thanh Le-Cong, Xuan Bach D. Le, David Lo, Quyet Thang Huynh, Quang Huy Bui, Nhat Hoa Tran; "Automated Patch Validation via program invariants"; *Major Revision, IEEE Transaction on Software Engineering (TSE), 2023*

TSE'22   Truong-Giang Nguyen, Thanh Le-Cong, Kang Hong Jin, Bowen Xu, Jiayuan Zhou, Xin Xia, Ahmed E. Hassan Xuan Bach D. Le, David Lo; "MiDas: Multi-granularity Model for Vulnerability-fixing Commit Classification"; *Revise and Resubmit, IEEE Transaction on Software Engineering (TSE), 2023*

Experience

1/2022 - present

Software Analytics Research Group, Singapore Management University
Researcher Engineer - Advisor: Prof. David Lo & Dr. Bach Le
- Research on automted debugging for Software and AI systems under the supervision of Prof. David Lo (SMU) and Dr. Le Dinh Xuan Bach (University of Melbourne)
- Current projects: (1) Vulnerability detection for machine learning frameworks; (2) Property Inference for Deep Neural Networks and (3) Bug localization and repair;
- Result: Published 3 paper including 3 A*-ranked conference paper and 1 A-ranked conference paper; and submitted 2 manusripts for TSE journals, 1 manusript for A*-ranked conference and 1 manusript for A-ranked conference.

6/2017 - 12/2021

Hanoi University of Science and Technology
Researcher Assistant - Advisor: Prof. Huynh Quyet Thang & Dr. Bach Le
- Led and collaborated with professors on 6+ research projects on various topics including software engineering, computer vision and evolutionary algorithm.
- Published 4 papers including 1 A-ranked papers (first author), 1 C-ranked paper (first author) and 1 journal paper (co-author)

7/2019

Big Data Visualisation Lab, Griffith University
Researcher Intern - Advisor: Dr. Nguyen Quoc Viet Hung
- Develop a novel node embedding techiniques based on community detection;
- Result: published a preprint, which is available online in Openreview (`https://openreview.net/forum?id=Byl3K2VtwB`).

Skills

Programmmig Languages	Python, Java, Rust, C/C++
Deep Learning Frameworks	Pytorch, Tensorflows
Machine Learning Libraries	Sklearn, Numpy, Pandas, Networkx, DGL, OpenCV

Operating Systems	Linux, Windows
Database Management	MS SQLServer, MySQL
Editor	Latex, MS Office

Honors and Awards

2022 | **[A1] Melbourne Graduate Scholarship (about $400k AUD)**
The University of Melbourne

2022 | **[A2] Best Thesis Award (Top 1/600)**
Hanoi University of Science and Technology

2021 | **[A3] Best Presentation Award in Thesis Defense Best Thesis Award (Top 30/600)**
Hanoi University of Science and Technology

2021 | **[A4] University Scholarship for Academic Excellency (Top 1%)**
Hanoi University of Science and Technology

2020 | **[A5] Winner of the Innovative Information Technology Products Contest**
Hanoi University of Science and Technology

2020 | **[A6] Runner-up Prize of the Scientific Research Student Competition**
Hanoi University of Science and Technology

2018 | **[A7] Winner of the IEEE WCCI Competition on Evolutionary Multi-task Optimization**
IEEE

2017 | **[A8] First Prize of the Vietnam Mathematics Olympiad for University Students**
Vietnam Mathematical Society

2016 | **[A9] Silver Meldal in the 38th International Mathematic Tournament of Cities in Hanoi**
Vietnam National University

2016 | **[A10] Selected Participant in the Vietnam Team Selection Test for Internation Mathematical Olympiad (Top 30 nationwide)**
Vietnam Ministry of Education and Training

2016 | **[A11] Second Prize of the National Mathematical Competition for Excellent High School Students**
Vietnam Ministry of Education and Training

2014 | **[A12] Scholarship of the National Key Program on Mathematics Development (about $800 USD)**
Vietnam Ministry of Education and Training

References

Dr. Bach Le
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Dr. Huynh Quyet Thang
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