Thanh Le-Cong

✉ congthanh.le@student.unimelb.edu.au | 📞 +61-0403054496 | ⧉ thanhlecongg | ⊕ homepage

Education

2/2023 – Now

The Univerisity of Melbourne
Ph.D Student in Engineering and IT
- Advisor: Dr. Bach Le and Prof. Toby Murray;
- Topic: Automated Software Bug Fixing
- Funded by the Melbourne Research Scholarship;
- Nominated for Google PhD Fellowship 2023.

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;
- Selected for Talented Engineering Program (Top 30 in our cohorts);
- Awarded Best Thesis Award AY2021 by School of Communication and Information Technology, HUST.

Research Interests

I am deeply interested in the field of bug/vulnerability detection, management, and repair. My research goal is to develop automated solutions that can leverage recent technological advancements, such as artificial intelligence and automated reasoning, to assist developers in identifying, managing, and fixing bugs and vulnerabilities. Currently, I am working on enhancing the reliablity and trusworthiness of automated bug fixing methods.

Selected Publications

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

Journal Papers

TSE'23

MiDas: Multi-granularity Model for Vulnerability-fixing Commit Classification
Truong-Giang Nguyen, **Thanh Le-Cong**, Kang Hong Jin, Ratnadira Widyasari, Chengran Yang, Zhipeng Zhao, Bowen Xu, Jiayuan Zhou, Xin Xia, Ahmed E. Hassan, Bach Le, David Lo
IEEE Transaction on Software Engineering, Just Accepted, 2023
[DOI][PDF][Code]

TSE'23

Invalidator: Automated Patch Correctness Assessment via Semantic and Syntactic Reasoning
Thanh Le-Cong, Bach Le, David Lo, Quyet Thang Huynh, Quang Huy Bui, Nhat Hoa Tran
IEEE Transaction on Software Engineering, Volume 49, Issue 6, 2023
[DOI][PDF][Code]

InfoSci'20

A Multifactorial Optimization Paradigm for Linkage Tree Genetic Algorithm
Thi Thanh Binh Huynh, Dinh Thanh Pham, Ba Trung Tran, **Thanh Le-Cong**, Minh Hai Phong Le, Ananthram Swami, Thu Lam Bui
Elsevier Information Sciences, Volume 540, 2020
[DOI][PDF][Code]

Conference Papers

SANER'23 **Extreme Multi-Label Learning for GitHub Topic Recommendation: How far are we?**
Ratnadira Widyasari, Zhipeng Zhao, **Thanh Le-Cong**, and Hong Jin Kang, David Lo
Proceeding of the 30th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), Research Track (Acceptance Rate = 27%), 2023
[DOI][PDF][Code]

ICSE'23 **Chronos: Time-Aware Zero-Shot Identification of Libraries from Vulnerability Report**
Yunbo Lyu, **Thanh Le-Cong***, Hong Jin Kang, Ratnadira Widyasari, Zhipeng Zhao, Xuan-Bach D Le, Ming Li, David Lo
Proceeding of the 45th IEEE/ACM International Conference on Software Engineering, Technical Track (Acceptance Rate = 26%), 2023
[DOI][PDF][Code]

ESEC/FSE'22 **AutoPruner: Transformer-based Call Graph Pruning**
Thanh Le-Cong, Kang Hong Jin, Truong-Giang Nguyen, Stefanus Agus Haryono, David Lo, Xuan-Bach D. Le, Quyet-Thang Huynh
Proceeding of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, Research Track (Acceptance Rate = 22%), 2022
[DOI][PDF][Code]

ICSME'22 **FFL: Fine grained Fault Localization for Student Programs via Syntactic and Semantic Reasoning**
Thanh-Dat Nguyen, **Thanh Le-Cong**, Bach Le, Duc Minh Luong, David Lo, Quyet-Thang Huynh
Proceeding of the 38th IEEE International Conference on Software Maintenance and Evolution, Research Track (Acceptance Rate = 23%), 2022
[DOI][PDF][Code]

ISSRE'21 **Usability and Aesthetic: Better Together for Automated Repair of Web Pages"**
Thanh Le-Cong, Bach Le, Quyet Thang Huynh, Phi Le Nguyen
Proceeding of the 32nd IEEE International Symposium on Software Reliability Engineering (ISSRE), Research Track (Acceptance Rate = 27.5%), 2021
[DOI][PDF]

Short/Workshop Papers

ASE'23 **Are We Ready to Embrace Generative AI for Software Q&A?**
Bowen Xu, Thanh-Dat Nguyen, **Thanh Le-Cong**, Thong Hoang, Jiakun Liu, Kisub Kim, Chen Gong, Changan Niu, Chenyu Wang, Bach Le, David Lo
Just Accepted, the 38th IEEE/ACM International Conference on Automated Software Engineering, New Ideas and Emerging Results Track

ESEC/FSE'22 **VulCurator: A Vulnerability-Fixing Commit Detector**
Truong-Giang Nguyen, **Thanh Le-Cong**, Kang Hong Jin, Xuan-Bach D. Le, David Lo
Proceeding of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Demonstration Track (Acceptance Rate = 56.5%), 2022
[DOI][PDF][Code]

ICSE'22 **Towards the Analysis of Graph Neural Network**
Thanh-Dat Nguyen, **Thanh Le-Cong***, ThanhVu H. Nguyen, Bach Le, Huynh Quyet Thang
Proceeding of the 44th IEEE/ACM International Conference on Software Engineering, New Ideas and Emerging Results Track (Acceptance Rate = 26.8%), 2022
[DOI][PDF]

Works Under Submission

Submitted   **Refining ChatGPT-Generated Code: Characterizing and Mitigating Code Quality Issues**
Yue Liu, **Thanh Le-Cong**, Ratnadira Widyasari, Chakkrit Tantithamthavorn, Li Li, Bach Le, David Lo
Under Review, ACM Transactions on Software Engineering and Methodology

Submitted   **Adversarial Patch Generation for Automated Program Repair**
Abdulaziz Alhefdhi, Hoa Khanh Dam, Xuan-Bach D. Le, **Thanh Le-Cong**, and Aditya Ghose
Under Review, in the 30th Asia-Pacific Software Engineering Conference (APSEC'23)

Revising   **PatchZero: Zero-Shot Automatic Patch Correctness Assessment**
Xin Zhou, Bowen Xu, Kisub Kim, DongGyun Han, **Thanh Le-Cong**, Junda He, Bach Le, and David Lo
Revise and Resubmit, IEEE Transaction on Software Engineering

Experience

2/2023 - Now   **CIS, The University of Melbourne**
Graduate Researcher - Advisor: Dr. Bach Le & Prof. Toby Murray

1/2022 - 1/2023   **Software Analytics Research Group, Singapore Management University**
Researcher Engineer - Advisor: Prof. David Lo & Dr. Bach Le

1/2019 - 12/2021   **Intelligent Software Engineering Lab, Hanoi University of Science and Technology**
Researcher Assistant - Advisor: Prof. Huynh Quyet Thang & Dr. Bach Le

6/2017 - 1/2019   **Modelling, Simulation and Optimization Lab, Hanoi University of Science and Technology**
Researcher Assistant - Advisor: Prof.Huynh Thi Thanh Binh

7/2019   **Big Data Visualisation Lab, Griffith University**
Researcher Intern - Advisor: Dr. Nguyen Quoc Viet Hung

Honors and Awards

2023   **Nomination for Google PhD Fellowship (2 selected candidates)**
The University of Melbourne

2022   **Melbourne Graduate Scholarship**
The University of Melbourne

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

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

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

2020   **Winner of the Innovative Information Technology Products Contest**
Hanoi University of Science and Technology

2020	**Runner-up Prize of the Scientific Research Student Competition**
	Hanoi University of Science and Technology
2018	**Winner of the IEEE WCCI Competition on Evolutionary Multi-task Optimization**
	IEEE
2017	**First Prize of the Vietnam Mathematics Olympiad for University Students**
	Vietnam Mathematical Society
2016	**Silver Meldal in the 38th International Mathematic Tournament of Cities in Hanoi**
	Vietnam National University
2016	**Second Prize of the National Mathematical Competition for Excellent High School Students**
	Vietnam Ministry of Education and Training

References

Dr. Bach Le
ARC DECRA Fellow
Lecturer, University of Melbourne
Email: bach.le@unimelb.edu.au

Dr. Toby Murray
Deputy Director, Defence Science Institute
Associate Professor, University of Melbourne
Email: toby.murray@unimelb.edu.au

Dr. David Lo
IEEE Fellow, ASE Fellow, ACM Distinguished Member
Professor, Singapore Management University
Email: davidlo@smu.edu.sg

Dr. Huynh Quyet Thang
President and Associate Professor, Hanoi University of Science and Technology
Email: thanghq@soict.hust.edu.vn