

# THIBAUD LUTELLIER

Ti-bo Lu-te-lee-eh ◊ (he/him)

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## EDUCATION

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University of Waterloo, Waterloo, ON, Canada

Sep. 2015 - Dec. 2020

Ph.D., Computer Software

Supervisor: Dr Lin Tan

University of Waterloo, Waterloo, ON, Canada

Sep. 2013 - Aug. 2015

Master of Applied Science

Supervisor: Dr Lin Tan

Université Jean Monnet, Saint-Etienne, France

Sep. 2009 - Sep. 2012

Ingénieur diplômé de Télécom Saint-Etienne

## PUBLICATIONS

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**C1** Yi Wu, Nan Jiang, Hung Pham, [Thibaud Lutellier](#), Jordan Davis, Lin Tan, Petr Babkin, and Sameena Shah. *How Effective are Neural Networks for Fixing Security Vulnerabilities*. (**ISSTA 2023**). Acceptance Rate: 23%

**C2** Nan Jiang, Kevin Liu, [Thibaud Lutellier](#), and Lin Tan. *Impact of Code Language Models on Automated Program Repair*. (**ICSE 2023**). Acceptance Rate: 26%

**C3** Nan Jiang, [Thibaud Lutellier](#), Yiling Lou, Lin Tan, Dan Goldwasser, and Xiangyu Zhang. *KNOD: Domain Knowledge Distilled Tree Decoder for Automated Program Repair*. (**ICSE 2023**) Acceptance Rate: 26%.

**C4** Jiannan Wang, [Thibaud Lutellier](#), Shangshu Qian, Hung Pham, and Lin Tan. *EAGLE: Creating Equivalent Graphs to Test Deep Learning Libraries*. (**ICSE 2022**). Acceptance Rate 26%.

**C5** Shangshu Qian, Hung Pham, [Thibaud Lutellier](#), Theo Hu, Jungwon Kim, Lin Tan, Yaoliang Yu, Jiahao Chen, and Sameena Shah. *Are My Deep Learning Systems Fair? An Empirical Study of Fixed-Seed Training*. (**NeurIPS 2021**). Acceptance Rate 26%.

**C6** Nan Jiang, [Thibaud Lutellier](#), and Lin Tan. *CURE: Code-Aware Neural Machine Translation for Automatic Program Repair*. The 2021 IEEE/ACM 43rd International Conference on Software Engineering. (**ICSE 2021**). 13 pages. Acceptance Rate 22% (138/615). [Cited 48 times].

**C7** Hung Viet Pham, Shangshu Qian, Jiannan Wang, [Thibaud Lutellier](#), Jonathan Rosenthal, Lin Tan, Yaoliang Yu, and Nachiappan Nagappan. *Problems and Opportunities in Training Deep-Learning Software Systems: An Analysis of Variance*. The 35th IEEE/ACM International Conference on Automated Software Engineering. (**ASE 2020**). 12 pages. Acceptance Rate 22.5% (93/414). **ACM SIGSOFT Distinguished Paper Award!**. [Cited 35 times].

**C8** [Thibaud Lutellier](#), Hung Viet Pham, Lawrence Pang, Yitong Li, Moshi Wei and Lin Tan. *CoNuT: Combining Context-Aware Neural Translation Models using Ensemble for Program Repair*. The ACM SIGSOFT International Symposium on Software Testing and Analysis (**ISSTA 2020**). 14 pages. Acceptance Rate 26.5% (43/162). [Cited 100 times].

**C9** Hung Viet Pham, [Thibaud Lutellier](#), Weizhen Qi, and Lin Tan. *CRADLE: Cross-Backend Validation to Detect and Localize Bugs in Deep Learning Libraries*. The 41st International Conference on Software Engineering (**ICSE 2019**). 12 pages. Acceptance rate 21% (109/529). [Cited 83 times].

**J1** Tomasz Kuchta\*, [Thibaud Lutellier\\*](#), Edmund Wong, Lin Tan, and Cristian Cadar. *On the Correctness of Electronic Documents: Studying, Finding, and Localizing Inconsistency Bugs in PDF Readers*

and Files. Springer Empirical Software Engineering (**EMSE 2018 / FSE 2018**). Journal First Track.

\* The first two authors contributed equally to this paper. 34 pages. [Cited 20 times].

**J2** Thibaud Lutellier, Devin Chollak, Joshua Garcia, Lin Tan, Derek Rayside, Nenad Medvidovic and Robert Kroeger. *Measuring the Impact of Code Dependencies on Software Architecture Recovery Techniques*. IEEE Transactions on Software Engineering (**TSE 2017**). 23 pages. [Cited 51 times].

**C10** Thibaud Lutellier, Devin Chollak, Joshua Garcia, Lin Tan, Derek Rayside, Nenad Medvidovic and Robert Kroeger. *Comparing Software Architecture Recovery Techniques Using Accurate Dependencies*. The 37th IEEE International Conference on Software Engineering, Software Engineering in Practice (**ICSE-SEIP 2015**). 10 pages. Acceptance Rate: 22.5% (23/102). [Cited 89 times].

**J3** Hossain Shahriar, Komminist Weldemariam, Mohammad Zulkernine and Thibaud Lutellier. *Effective detection of vulnerable and malicious browser extensions*. Computers & Security (**CoSe 2014**). 29 pages. [Cited 29 times].

**C11** Hossain Shahriar, Komminist Weldemariam, Thibaud Lutellier, Mohammad Zulkernine. *A Model-Based Detection of Vulnerable and Malicious Browser Extensions*. The 7th IEEE International Conference on Software Security and Reliability (**SERE 2013**). 10 pages. [Cited 11 times].

## FUNDING & SCHOLARSHIPS

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- **NSERC Discovery Grant** 2024-2029. \$145,000.
- **NSERC Discovery Grant - Launch Supplement**, 2024-2029. \$12,500.
- **UW Alumni @ Microsoft Graduate Scholarship**, 2018. \$10,000.
- **Ontario Graduate Scholarship**, 2016-2018. \$45,000.
- **President's Graduate Scholarship**, 2016-2018. \$5,000.

## FUNDING OBTAINED BY MY STUDENTS

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I'm proud of working with exceptional students who got the following awards while working with me!

- Zara Ezeasor: **NSERC Black Student Researcher Award**, 2023. \$8,500.
- Willis Kneeland: **Mazankowski Award**, 2023. \$8,500.
- Priscilla Adebajji: **ScotiaBank URI Stipend to support BIPOC students at the forefront of STEM research**, 2023. \$8,500.
- Israel Oni: **NSERC Black Student Researcher Award**, 2023. \$8,500.

## AWARDS

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- ACM SIGSOFT Distinguished Paper Award, ASE 2020
- ACM SIGSOFT CAPS Award, FSE 2018
- ACM SIGSOFT CAPS Award, ICSE 2015
- 3 Faculty of Engineers Awards, 2014, 2017, and 2018
- University of Waterloo Research Travel Assistanship, 2015

## FORMAL TALKS

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## Conference Talks:

**T1** *CoCoNuT: Combining Context-Aware Neural Translation Models using Ensemble for Program Repair*, **ISSTA'20**, virtual, July 2020.

**T2** *On the Correctness of Electronic Documents: Studying, Finding, and Localizing Inconsistency Bugs in PDF Readers and Files*, Conference talk at the Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT International Symposium on the Foundations of Software Engineering **FSE'18 (Journal First track)**, Lake Buena Vista, Florida, Nov. 2018.

**T3** *Comparing Software Architecture Recovery Techniques Using Accurate Dependencies*, Conference talk at the 37th IEEE International Conference on Software Engineering, Software Engineering in Practice (**ICSE-SEIP 2015**), Florence, Italy, May 2015.

**Invited Talks:** **T4** *AI in the Classroom?*, Teaching Seminar, Camrose, Alberta, Mar. 2024.

**T5** *The impact of GPT models*, Teaching Seminar, Camrose, Alberta, Mar. 2023.

**T6** *Using AI to Fix Software Bugs*, Lunch & Learn, Camrose, Alberta, Nov. 2022.

**T7** *CoCoNuT: Combining Context-Aware Neural Translation Models using Ensemble for Program Repair*, PurPL Retreat, virtual, Aug 2020.

**T8** *On the Correctness of Electronic Documents: Studying, Finding, and Localizing Inconsistency Bugs in PDF Readers and Files*, Midwest PL Summit 2019, West Lafayette, Indiana, Sept. 2019.

**T9** *AI-Powered Deep Software Defect and Vulnerability Detection System*, Shanghai Innovation Summit, Shanghai, China, Apr. 2019.

**T10** *AI-Powered Deep Software Defect and Vulnerability Detection System*, 2nd China University Scientific and Technological Achievements Fair (CUSTAF), Huizhou, China, May 2018.

**T11** *AI-Powered Deep Software Defect and Vulnerability Detection System*, 2nd China-Canada International Technology Transfer Conference, Xuzhou, China, Apr. 2018.

## SERVICE ACTIVITIES

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### Organization:

- Program Committee member of ICSE 2025 Main Research Track. 2025
- Program Committee member of ISSTA 2025 Main Research Track. 2025
- Program Committee member of ESEC/FSE 2024 Main Research Track. 2024
- Program Committee member of APR@ICSE24, the 5th International Workshop on Automated Program Repair 2024
- Program Committee member of ESEC/FSE 2022 Tool Demonstrations Track. 2022,2023
- Web Chair of the 14th Working Conference on Mining Software Repositories (MSR 2017) 2017

### Reviewer:

**TSE:** IEEE Transactions on Software Engineering 2018-24  
**EMSE:** Empirical Software Engineering 2020-24  
**TOSEM:** ACM Transactions on Software Engineering and Methodology 2021-23

<b>IEEE Access</b>	2021
<b>FAIRWARE:</b> IEEE/ACM International Workshop on Software Fairness(FAIRWARE)	2018
<b>University Service:</b>	
• Member of the Assessment Committee	2023
• Augustana Representative on the Campus Saint-Jean Faculty Council	2022-25
• Preview Day Faculty Presenter	Winter and Fall 2023
• Administrator of the Coverity Static Analysis tool for University of Waterloo	2017-19
• Referee, University of Waterloo Software Engineering Capstone Design Symposium Day	2018
• Conversation Facilitator for the English Conversation Circles, UW Student Success Center	2016

## RESEARCH EXPERIENCE

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<b>Postdoc Fellowship</b> at the University of Waterloo	<i>Jan. 2021 - Dec. 2021</i>
<ul style="list-style-type: none"> <li>• Conducted research on automatic program repair, deep learning fairness, deep learning testing, and defect prediction.</li> <li>• Mentored several graduate and undergrad students in the research lab</li> <li>• Published research findings in A* and A software engineering and AI conferences</li> <li>• Peer-reviewed papers for software engineering conferences and journals</li> </ul>	
<b>Graduate Research Assistant</b> at the University of Waterloo	<i>Sep. 2013 - Dec. 2020</i>
<ul style="list-style-type: none"> <li>• Conducted research on automatic program repair, deep-learning library testing, bug detection and repair in electronic documents and readers, software architecture recovery, and defect and vulnerability prediction</li> <li>• Mentored several undergrad and international students in the research lab</li> <li>• Published research findings in A and A* software engineering conferences and journals</li> <li>• Peer-reviewed papers for A* and A software engineering conferences and journals</li> </ul>	
<b>Research Assistant</b> at Queen's Reliable Software Technology, Kingston	<i>2012</i>
<ul style="list-style-type: none"> <li>• Conducted research on Web security, investigated and profiled vulnerable, malicious and benign extensions for Firefox browser looking at malicious or vulnerable JavaScript code of the extensions.</li> <li>• Published 2 papers in B conferences and journals.</li> </ul>	

## TEACHING EXPERIENCE

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<b>University of Alberta:</b>	
<b>AUCSC 395:</b> Directed Study I: Computer Security	<i>Winter-24</i>
<b>AUCSC 112:</b> Data Structures and Algorithms (Lecture and Lab)	<i>Winter-24</i>
<b>AUCSC 395:</b> Directed Study I: A study on the Effectiveness, Weaknesses, and Evaluation of Large Language Models	<i>Fall-23</i>
<b>AUCSC 111:</b> Intro to Computer Thinking and Problem Solving (Lab)	<i>Fall-23</i>
<b>AUCSC 220:</b> Software Engineering (Lecture and Labs)	<i>Fall-23</i>
<b>AUSCI 135:</b> Intro to Computer Thinking and Problem Solving (Lab)	<i>Winter-23</i>
<b>AUMAT 328:</b> Cryptography (Lecture, <b>NEW</b> )	<i>Winter-23</i>

**AUCSC 211:** Data Structures and Algorithms (Lecture) *Winter-23*

**AUCSC 250:** Computer Organization and Architecture I (Lecture and Lab) *Fall-22*

**Purdue University**

**CS592:** Software Reliability and AI (Guest Lecture) *Fall-21*

**University of Waterloo**

**ECE453/SE465:** Software Testing, Quality Assurance, and Maintenance (Lab Instructor) *Winter-18*

**ECE653:** Testing, Quality Assurance, and Maintenance (TA) *Winter-17*

**ECE754:** Software Bug Detection and Tolerance (TA) *Spring-16*

**SE465:** Software Testing, Quality Assurance, and Maintenance (TA) *Winter-14,15,16*

**EMPLOYMENT HISTORY**

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**University of Alberta - Augustana Campus, Camrose, AB, Canada** *Jul. 2022 - Present*

Assistant Professor

**University of Waterloo, Waterloo, ON, Canada** *Jan. 2021 - Apr. 2022*

Postdoc Fellowship

Supervisor: Dr M. Tripunitara and Dr L. Tan

**QualDivine Inc.** *Sep. 2018 - Dec. 2021*

CEO and Co-Founder

**University of Waterloo, Waterloo, ON, Canada** *Sep. 2013 - Dec. 2020*

Research Assistant

Supervisor: Dr L. Tan

**QRST Lab, Queen's University, Kingston, ON, Canada** *Jan 2012 - June. 2012*

Research Assistant

Supervisor: Dr M. Zulkernine

**CieNum, Saint-Etienne, France** *Mar 2011-Jun 2011*

Software Developer

**SNCF, Nantes, France** *Feb 2010*

Database Manager

**SUPERVISION (\*) AND MENTORSHIP**

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\* Zara Ezeasor (URA, MMIWG2S in media) *S-2024*

\* Nathan Yan (URA, Toxicity in Open Source Development) *S-2024*

\* Xiaofei Yu (URA, ChatGPT and Program Repair) *S-2024*

\* Priscilla Adebajji (URA, ChatGPT for Quantum Program Repair) *S-2024*

\* Brett Siemens (URA, ChatGPT and Program Repair) *S-2024*

\* Daniel Kirivita (Directed Studies, Computer Security) *W-2024*

\* Shadi Khalil (Directed Studies, LLM benchmarking project) *F-2023*

\* Harsh Darji (URA, Mining Kaggle Dataset Project) *F-2023 and W-2024*

\* Wenyan Jiang (URA, Bugs in Data Science Programs) *S-2023*

enrolled as a PhD at Purdue University

\* Priscilla Adebajji (BIPOC at the forefront of STEM Research, Animal Behavior project) *S-2023*

\* Israel Oni (NSERC Black Student Researcher Award, Mining Jupyter Notebooks project) *S-2023*

\* Willis Kneeland (Mazankowski Award, Mining Jupyter Notebooks project) *S-2023*

\* Diany Pressato (URA, Mining Jupyter Notebooks project) *2023*

enrolled as a Master at Concordia University

Yi Wu (PhD, Vulnerability Repair project) *2022*

Qi Li (PhD, Ensemble Learning for NMT-based APR project) *2022*

Jiannan Wang (PhD, DL model testing project) *2021*

Yuxuan Wu (URA, Fault Localization project)	<i>S-2021 and F-2021</i>
Qichen Li (URA, Automatic Program Repair project)	<i>W-2021 and S-2021</i>
Lu Yan (URA and PhD, Source code trace representation project)	<i>2020-2021</i>
Nan Jiang (Phd, Automatic Program Repair project)	<i>2020-2021</i>
Yitong Li (MSc, Automatic Program Repair project)	<i>2018-2020</i>
Ahan Gupta (URA, Automatic Program Repair project)	<i>W-2020 and S-2020</i>
Lawrence Pang (URA, Automatic Program Repair project)	<i>F-2018 and F-2019</i>
Jie Li (URA, Automatic Program Repair project)	<i>F-2019</i>
Joey Vinyard (URA, Automatic Program Repair project)	<i>F-2019</i>
Jiahe Nie (URA, Defect Prediction project)	<i>S-2019</i>
Kefan Xu (URA, Defect Prediction project)	<i>S-2019</i>
Nicholas Vadivelu (URA, Defect Prediction project)	<i>W-2019</i>
Bo Yuan Tan (URA, Automatic Program Repair project)	<i>W-2019</i>
Shruti Dembla (URA, Automatic Program Repair project)	<i>S-2018</i>
Moshi Wei (MSc, Automatic Program Repair project)	<i>2018-2019</i>
Michael Chong (URA and MSc, Vulnerability Prediction project)	<i>2015-2017</i>
Adam Hyde (UCEP, PDF Inconsistency Detection project)	<i>F-2015</i>
Lance Paje (UCEP, PDF Inconsistency Detection project)	<i>F-2015</i>
Ritcha Bindra (URA, Vulnerability Prediction project)	<i>S-2015</i>
Wen Sheng (Mitacs, Architecture Recovery project)	<i>S-2014</i>