

# ThanhVu Huy Nguyen: Curriculum Vitae

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# 1 Personal

- Name: ThanhVu Huy Nguyen  
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- Citizenship: U.S
  - DoD Secret Clearance (inactive)



**Bio.** ThanhVu Nguyen is an assistant professor in the Department of Computer Science at George Mason University. Prior to joining GMU, he was at the University of Nebraska-Lincoln. He received his Ph.D. in Computer Science from the University of New Mexico-Albuquerque and completed a two-year postdoc at the University of Maryland-College Park.

His research is in the intersection of Software Engineering and Programming Languages. In particular, he focuses on improving software quality through dynamic invariant inference, automatic program repair, and highly-configurable systems analysis. He is a recipient of the NSF CISE Career Research Initiation Initiative (CRII) Award, a 10-year Most Influential Paper award (at ICSE 2019), and a 10-year Most Impact Paper Award (at GECCO 2019).

## 2 Education and Employment History

### 2.1 Education

- **Postdoc**, Computer Science, [University of Maryland](#), College Park, MD 2014–2016  
Mentor: Jeff Foster  
Research Topic: Analyzing Highly-Configurable Systems and Invariant Generation
- **Ph.D.**, Computer Science, [University of New Mexico](#), Albuquerque, NM 2007–2014  
Advisers: Stephanie Forrest and Deepak Kapur  
Dissertation: Automatic Program Repair and Dynamic Invariant Generation [T1]
- **M.S.**, Computer Science, [Penn State University](#), Harrisburg, PA 2003–2006  
Adviser: Thang N. Bui  
Thesis: Using Ant-based Algorithms to solve NP-Complete graph problems [T2]
- **B.S.**, Computer Science, [Penn State University](#), University Park, PA 1999–2003
- **High School**
  - [Bishop McDevitt](#), Harrisburg, PA 1997–1999
  - [McKinley High School](#), Honolulu, HI 1995–1997

### 2.2 Employment History

- Assistant Professor, Department of Computer Science, [George Mason University](#) 2021–current
- Assistant Professor, School of Computing, [University of Nebraska-Lincoln](#) 2016–2021
- Postdoc, Department of Computer Science, [University of Maryland-College Park](#) 2014–2016
- Research Assistant, Dept. of Computer Science, [University of New Mexico-Albuquerque](#) 2007–2014
- Internship, Information Technology Division, [Naval Research Laboratory](#) 2012–2013

- Internship, Advanced Technology Laboratories, [Lockheed Martin](#) 2007
- Internship, Tactical Electrical Warfare Division, [Naval Research Laboratory](#) 2004–2016

## 3 Research

### 3.1 Research Interests

Software Engineering; Programming Languages; Software Testing, Verification, and Analysis; Software Correctness and Reliability; Dynamic Invariant Generation; Automatic Program Repair.

### 3.2 Publication Record

Notes:

- <sup>1</sup>, <sup>2</sup>, <sup>3</sup> denote co-authorship with my undergraduate, M.S., and Ph.D. students, respectively.
- **Bold journal and conference names** indicate full research papers at top-tier venues (e.g., TSE, OOPSLA, ICSE, FSE, PLDI). See [csrankings.org](#) for top CS conferences.
- In computer science, full research conference papers are full-length and rigorously reviewed by at least three peers. Top-tier conferences have acceptance rates comparable to or even lower than leading journals.
- Citations ([Google Scholar](#)): 3228, h-index 15, i10-index 22 (as of Oct'22).

#### 3.2.1 Peer Reviewed Conference Proceedings (in print)

- C1 Simón Gutierrez Brida, Germán Regis, Guolong Zheng<sup>3</sup>, Hamid Bagheri, ThanhVu Nguyen, Nazareno Aguirre, and Marcelo Frias. “ICEBAR: Feedback-Driven Iterative Repair of Alloy Specifications”. In: *Automated Software Engineering (ASE)*. [PDF](#). IEEE, 2022. Acceptance 22%
- C2 Guolong Zheng<sup>3</sup>, ThanhVu Nguyen, Simón Gutiérrez Brida, Germán Regis, Marcelo Frias, Nazareno Aguirre, and Hamid Bagheri. “ATR: Template-based Repair for Alloy Specifications”. In: *International Symposium on Software Testing and Analysis (ISSTA)*. [PDF](#). ACM, 2022, pages 666–677. Acceptance 26.6%
- C3 KimHao Nguyen<sup>1</sup>, ThanhVu Nguyen, and Quoc-Sang Phan. “Analyzing the CMake Build System”. In: *2022 IEEE/ACM 44th International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP)*. [PDF](#). IEEE, 2022, pages 27–28. ??%
- C4 Thanh-Dat Nguyen, Thanh Le-Cong, ThanhVu H Nguyen, Xuan-Bach D Le, and Quyet-Thang Huynh. “Toward the Analysis of Graph Neural Networks”. In: *2022 IEEE/ACM 44rd International Conference on Software Engineering-New Ideas and Emerging Results (ICSE-NIER)*. [PDF](#). IEEE, 2022. Acceptance 28%
- C5 Didier Ishimwe<sup>3</sup>, KimHao Nguyen<sup>1</sup>, and ThanhVu Nguyen. “Dynaplex: Inferring Asymptotic Runtime Complexity of Recursive Programs”. In: *2022 IEEE/ACM 44th International Conference on Software Engineering: Companion Proceedings (ICSE-Companion)*. [PDF](#). IEEE, 2022, pages 61–64. Acceptance 50%
- C6 ThanhVu Nguyen, KimHao Nguyen<sup>1</sup>, and Hai Duong<sup>3</sup>. “SymInfer: Inferring Numerical Invariants using Symbolic States”. In: *2022 IEEE/ACM 44th International Conference on Software Engineering: Companion Proceedings (ICSE-Companion)*. [PDF](#). IEEE, 2022, pages 197–201. Acceptance 50%

- C7 Didier Ishimwe<sup>3</sup>, KimHao Nguyen<sup>1</sup>, and ThanhVu Nguyen. “Dynaplex: analyzing program complexity using dynamically inferred recurrence relations”. In: *Proceedings of the ACM on Programming Languages* 5.(OOPSLA) (2021). [PDF](#), pages 1–23. Acceptance 34%
- C8 KimHao Nguyen<sup>1</sup> and ThanhVu Nguyen. “GenTree: Using decision trees to learn interactions for configurable software”. In: *International Conference on Software Engineering (ICSE)*. [PDF](#). IEEE, 2021, pages 1598–1609. Acceptance 22%, [artifact paper](#)
- C9 Guolong Zheng<sup>3</sup>, ThanhVu Nguyen, Simón Gutiérrez Brida, Germán Regis, Marcelo F Frias, Nazareno Aguirre, and Hamid Bagheri. “FLACK: Counterexample-guided fault localization for alloy models”. In: *International Conference on Software Engineering (ICSE)*. [PDF](#). IEEE, 2021, pages 637–648. Acceptance 22%, [artifact paper](#)
- C10 Simón Gutierrez Brida, Germán Regis, Guolong Zheng<sup>3</sup>, Hamid Bagheri, ThanhVu Nguyen, Nazareno Aguirre, and Marcelo Frias. “Bounded exhaustive search of alloy specification repairs”. In: *International Conference on Software Engineering (ICSE)*. [PDF](#). IEEE, 2021, pages 1135–1147. Acceptance 22%, [artifact paper](#)
- C11 KimHao Nguyen<sup>1</sup> and ThanhVu Nguyen. “GenTree: Inferring Configuration Interactions using Decision Trees”. In: *Automated Software Engineering-Tool Demo*. [PDF](#). IEEE, 2021, pages 1232–1236. Acceptance 47%
- C12 Guolong Zheng<sup>3</sup>, ThanhVu Nguyen, Simón Gutiérrez Brida, Germán Regis, Marcelo F Frias, Nazareno Aguirre, and Hamid Bagheri. “FLACK: Localizing Faults in Alloy Models”. In: *Automated Software Engineering-Tool Demo*. [PDF](#). IEEE, 2021, pages 1218–1222. Acceptance 47%
- C13 Simón Gutierrez Brida, Germán Regis, Guolong Zheng<sup>3</sup>, Hamid Bagheri, ThanhVu Nguyen, Nazareno Aguirre, and Marcelo Frias. “BeAFix: An Automated Repair Tool for Faulty Alloy Models”. In: *Automated Software Engineering-Tool Demo*. [PDF](#). IEEE, 2021, pages 1213–1217. Acceptance 47%
- C14 TonChanh Le, Timos Antonopoulos, Parisa Fathololumi, Eric Koskinen, and ThanhVu Nguyen. “Dynamite: Dynamic Termination and Non-termination Proofs”. In: *Proceedings of the ACM on Programming Languages* 4.(OOPSLA) (2020). [PDF](#), pages 1–30. Acceptance 36%
- C15 ThanhVu Nguyen, Didier Ishimwe<sup>3</sup>, Alexey Malyshev<sup>2</sup>, Timos Antonopoulos, and Quoc-Sang Phan. “Using Dynamically Inferred Invariants to Analyze Program Runtime Complexity”. In: *International Workshop on Software Security from Design to Deployment*. [PDF](#). 2020, pages 11–14
- C16 Guolong Zheng<sup>3</sup>, Hamid Bagheri, and ThanhVu Nguyen. “Debugging Declarative Models in Alloy”. In: *2020 IEEE International Conference on Software Maintenance and Evolution*. [PDF](#). IEEE, 2020, pages 844–848
- C17 ThanhVu Nguyen and KimHao Nguyen<sup>1</sup>. “Using Symbolic Execution to Analyze Linux KBuild Makefiles”. In: *International Conference on Software Maintenance and Evolution*. [PDF](#). IEEE, 2020, pages 712–716. Acceptance 37%
- C18 TonChanh Le, Guolong Zheng<sup>3</sup>, and ThanhVu Nguyen. “SLING: Using Dynamic Analysis to Infer Program Invariants in Separation Logic”. In: *Programming Language Design and Implementation (PLDI)*. [PDF](#). ACM, 2019, pages 788–801. Acceptance 27%
- C19 Benjamin Mariano, Josh Reese, Siyuan Xu, ThanhVu Nguyen, Xiaokang Qiu, Jeffrey S Foster, and Armando Solar-Lezama. “Program Synthesis with Algebraic Library Specifications”. In: *Proceedings of the ACM on Programming Languages* 3.(OOPSLA) (2019). [PDF](#), pages 1–25. Acceptance 36%

- C20 Guolong Zheng<sup>3</sup>, Quang Loc Le, ThanhVu Nguyen, and Quoc-Sang Phan. “Automatic Data Structure Repair using Separation Logic”. In: *Java PathFinder Workshop*. [PDF](#). 2018, pages 66–66
- C21 Paul Gazzillo, Ugur Koc, Thanhvu Nguyen, and Shiyi Wei. “Localizing Configurations in Highly-Configurable Systems”. In: *International Systems and Software Product Line Conference (Challenge Track)*. [PDF](#). 2018, pages 269–273
- C22 ThanhVu Nguyen, Matthew Dwyer, and William Visser. “SymInfer: Inferring Program Invariants using Symbolic States”. In: *Automated Software Engineering (ASE)*. [PDF](#). IEEE, 2017, pages 804–814. Acceptance 21%
- C23 ThanhVu Nguyen, Timos Antonopoulos, Andrew Ruef, and Michael Hicks. “Counterexample-guided approach to finding numerical invariants”. In: *Foundations of Software Engineering (FSE)*. [PDF](#). 2017, pages 605–615. Acceptance 24%
- C24 ThanhVu Nguyen, Deepak Kapur, Westley Weimer, and Stephanie Forrest. “Connecting Program Synthesis and Reachability: Automatic Program Repair using Test-Input Generation”. In: *International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*. [PDF](#). Springer, 2017, pages 301–318. Acceptance 28%
- C25 ThanhVu Nguyen, Ugur Koc, Javran Cheng, Jeffrey S. Foster, and Adam A. Porter. “iGen: Dynamic Interaction Inference for Configurable Software”. In: *Foundations of Software Engineering (FSE)*. [PDF](#). ACM, 2016, pages 655–665. Acceptance 27%
- C26 ThanhVu Nguyen, Deepak Kapur, Westley Weimer, and Stephanie Forrest. “Using Dynamic Analysis to Generate Disjunctive Invariants”. In: *International Conference on Software Engineering (ICSE)*. [PDF](#). IEEE, 2014, pages 608–619. Acceptance 20%
- C27 ThanhVu Nguyen, Deepak Kapur, Westley Weimer, and Stephanie Forrest. “Using Dynamic Analysis to Discover Polynomial and Array Invariants”. In: *International Conference on Software Engineering (ICSE)*. [PDF](#). IEEE, 2012, pages 683–693. Acceptance 21%
- **90+ citations**
  - **Distinguished Paper Award**
- C28 Westley Weimer, ThanhVu Nguyen, Claire Le Goues, and Stephanie Forrest. “Automatically Finding Patches Using Genetic Programming”. In: *International Conference on Software Engineering (ICSE)*. [PDF](#). IEEE, 2009, pages 364–367. Acceptance 12%
- **10-year Most Influential Paper Award**, received in 2019 for most influential paper in the field for the 10 years.
  - **800+ citations**
  - **Distinguished Paper Award**
  - **IFIP TC2 Manfred Paul Award for Excellence in Software: Theory and Practice**
- C29 Thang Bui, ThanhVu Nguyen, and Joseph Rizzo Jr. “Parallel Shared Memory Strategies For Ant-based Optimization Algorithms”. In: *Conference on Genetic and Evolutionary Computation (GECCO)*. [PDF](#). ACM, 2009, pages 1–8. Acceptance 41%
- **Best Paper Award**
- C30 Stephanie Forrest, ThanhVu Nguyen, Westley Weimer, and Claire Le Goues. “A genetic programming approach to automated software repair”. In: *Conference on Genetic and Evolutionary Computation (GECCO)*. [PDF](#). 2009, pages 947–954. Acceptance 41%
- **Most Impact Award**, received in 2019 for most impactful paper in the field for the last decade.

- **300+ citations**
- **Best Paper Award**

- C31 ThanhVu Nguyen, Westley Weimer, Claire Le Goues, and Stephanie Forrest. “Using Execution Paths to Evolve Software Patches”. In: *International Conference on Software Testing, Verification and Validation Workshops*. [PDF](#). IEEE, 2009, pages 152–153
- **Best Short Paper Award**
  - **Best Presentation Award**
- C32 G Viamontes, M Amduka, J Russo, Craven M, and T Nguyen. “Efficient Memoization Strategies for Object Recognition with a Multi-Core Architecture”. In: *Annual High Performance Embedded Computing Workshop*. [PDF](#). IEEE, 2007
- **Outstanding Submission**
- C33 James Smith III and ThanhVu Nguyen. “Fuzzy Decision Trees for Planning and Autonomous Control of a Coordinated Team of UAVs”. In: *International Society for Optical Engineering*. [PDF](#). SPIE, 2007
- C34 James Smith III and ThanhVu Nguyen. “Genetic Program based Data Mining of Fuzzy Decision Trees and Methods of Improving Convergence and Reducing Bloat”. In: *International Society for Optical Engineering*. [PDF](#). SPIE, 2007
- C35 Thang N Bui and ThanhVu H Nguyen. “An Agent-based Algorithm for Generalized Graph Colorings”. In: *Conference on Genetic and Evolutionary Computation (GECCO)*. [PDF](#). 2006, pages 19–26. Acceptance 46%
- C36 James Smith III and ThanhVu Nguyen. “Guiding Genetic Program Based Data Mining Using Fuzzy Rules”. In: *Intelligent Data Engineering and Automated Learning (IDEAL)*. [PDF](#). Springer, 2006, pages 1337–1345
- C37 James Smith III and ThanhVu Nguyen. “Evolutionary Data Mining Approach to Creating Digital Logic”. In: *International Conference on Informatics in Control Automation and Robotics (ICINCO)*. [PDF](#). Springer, 2006, pages 107–113
- C38 James Smith III and ThanhVu Nguyen. “Fuzzy Logic Based Resource Manager for a Team of UAVs”. In: *Annual Meeting of the North American Fuzzy Information Processing Society (NAFIPS)*. [PDF](#). IEEE, 2006, pages 463–470
- **Best Paper Award**
- C39 James Smith III and ThanhVu Nguyen. “Fuzzy Logic Based UAV Allocation and Coordination”. In: *International Conference on Informatics in Control Automation and Robotics (ICINCO)*. [PDF](#). Springer, 2006, pages 81–94
- C40 James Smith III and ThanhVu Nguyen. “Creating Fuzzy Decision Algorithms Using Genetic Program Based Data Mining Program”. In: *Annual Meeting of the North American Fuzzy Information Processing Society (NAFIPS)*. [PDF](#). IEEE, 2006, pages 471–477
- C41 James Smith III and ThanhVu Nguyen. “Resource Manager for an Autonomous Coordinated Team of UAVs”. In: *International Society for Optical Engineering*. [PDF](#). SPIE, 2006, pages 118–129
- C42 James Smith III and ThanhVu Nguyen. “Genetic Program based Data Mining to Reverse Engineer Digital Logic”. In: *International Society for Optical Engineering*. [PDF](#). SPIE, 2006, pages 24–35



- C43 James Smith III and ThanhVu Nguyen. “Distributed Autonomous Systems: Resource Management, Planning, and Control Algorithms”. In: *International Society for Optical Engineering*. [PDF](#). SPIE, 2005, pages 65–76
- C44 James Smith III and ThanhVu Nguyen. “Data Mining based Automated Reverse Engineering and Defect Discovery”. In: *International Society for Optical Engineering*. [PDF](#). SPIE, 2005, pages 232–242

### 3.2.2 Peer Reviewed Journal Publications (in print)

- J1 Thanhvu Nguyen, KimHao Nguyen<sup>1</sup>, and Matthew Dwyer. “Using Symbolic States to Infer Numerical Invariants”. In: *Transactions on Software Engineering (TSE)* (2021). [PDF](#). Impact factor 4.78
- J2 ThanhVu Nguyen, Deepak Kapur, Westley Weimer, and Stephanie Forrest. “DIG: A Dynamic Invariant Generator for Polynomial and Array Invariants”. In: *Transactions on Software Engineering Methodology (TOSEM)* 23.4 (2014). [PDF](#), 30:1–30:30. Impact factor 2.07
- J3 Claire Le Goues, ThanhVu Nguyen, Stephanie Forrest, and Westley Weimer. “Genprog: A Generic Method for Automatic Software Repair”. In: *Transactions on Software Engineering (TSE)* 38.1 (2011). [PDF](#), pages 54–72. Impact factor 4.78
- **Featured Article**
  - **1000+ citations**
- J4 Westley Weimer, Stephanie Forrest, Claire Le Goues, and ThanhVu Nguyen. “Automatic Program Repair with Evolutionary Computation”. In: *Communications of the ACM (CACM)* 53.5 (2010). [PDF](#), pages 109–116. Impact factor 5.41
- **Research Highlight**
  - **400+ citations**
- J5 Thang Bui, ThanhVu Nguyen, Chirag Patel, and Kim-Anh Phan. “An Ant-based Algorithm for Coloring Graphs”. In: *Discrete Applied Mathematics* 156.2 (2008). [PDF](#), pages 190–200. Impact factor 0.99
- **100+ citations**
- J6 James F Smith III and ThanhVu H Nguyen. “Autonomous and cooperative robotic behavior based on fuzzy logic and genetic programming”. In: *Integrated Computer-Aided Engineering* 14.2 (2007). [PDF](#), pages 141–159.

### 3.2.3 Books and Book Chapters

1. Deepak Kapur, Zhihai Zhang, Matthias Horbach, Hengjun Zhao, Qi Lu, and ThanhVu Nguyen. “Geometric Quantifier Elimination Heuristics for Automatically Generating Octagonal and Max-plus Invariants”. In: *Automated Reasoning and Mathematics: Essays in Memory of William W. McCune*. Volume 7788. [PDF](#). Springer, 2013, pages 189–228.

### 3.2.4 Invited Talks or Keynote Speeches

1. T.Nguyen. “Scalable DNN Verification using Constraint Solving”, Invited Talk, Virginia Tech (Northern VA campus), Sep. 2022
2. T. Nguyen. “Improving Software Quality using Automatic Invariant Discovery and Program Repair”, Invited Talk, Summer School on Formal Techniques, May 2021

3. T. Nguyen. “Improving Software Quality using Automatic Invariant Discovery and Program Repair”, Invited Talk, George Mason University, April 2021
4. W. Weimer, C. Le Goues, T. Nguyen, S. Forrest. “It Does What You Say, Not What You Mean: Lessons From A Decade of Program Repair”, Plenary Sessions: Most Influential Paper, International Conference on Software Engineering (ICSE), 2019

### 3.2.5 Dissertation

- T1 ThanhVu Nguyen. “Automating Program Verification and Repair Using Invariant Analysis and Test-input Generation”. [PDF](#). PhD thesis. University of New Mexico, Aug. 2014
- T2 ThanhVu Nguyen. “On the Graph Coloring Problem and Its Generalizations”. [PDF](#). Master’s thesis. The Pennsylvania State University, Dec. 2006

## 3.3 Research Funding Record

### 3.3.1 Internally Funded Grants

Table 1: Summary of Internally Research Funding.

Project	Sponsor	Role	Dates	Total	My Portion
Analyzing Configurable Software	UNL Seed Award	PI	2021–2021	\$10K	100% (\$10K)

1. “Analyzing Highly-Configurable System”, UNL, 1/1/2021–12/31/2021, \$10K (total, sole PI). PI: Nguyen.

**Description** We proposed to develop static, symbolic, and dynamic techniques to formally reason about highly-configurable systems.

### 3.3.2 Externally Funded Grants

Table 2: Summary of Externally Research Funding.

Project	Sponsor	Role	Dates	Total	My Portion
Analysis of CMake Build files Using Symbolic Execution	Facebook	PI	2021–	\$30K	100% (\$30K)
Analyzing Liveness Properties	NSF	PI	2021–2024	\$1.2M	33% (\$400K)
Analyzing Linux KBuild Makefiles	NSF	PI	2020–2022	\$175K	100% (\$175K)
REU Support	NSF	PI	2021–2022	\$16K	100% (\$16K)
Predictive Failure Avoidance	Army Research Office	Co-PI	2019–2021	\$550K	29% (\$160K)

1. “Analysis of CMake Build files using Symbolic Execution”, Facebook/Whatsapp unrestricted gift, 2021–, \$30K (total, sole PI). PI: Nguyen
2. “Collaborative: Medium: Ensuring Safety and Liveness of Modern Systems through Dynamic Temporal Analysis”, NSF ([2107035](#)), 7/15/2021–7/14/2024, \$1.2M (\$400K, PI). PI’s: Nguyen, Koskinen, Le, Antonopoulos.



**Description** We proposed to develop techniques that use dynamically inferred invariants to analyze program safety and liveness properties.

3. “CRII: Analyzing Linux KBuild Makefiles”, NSF ([1948536](#)), 4/1/2020–3/31/2022, \$175K (total, sole PI). PI: Nguyen.

**Description** We proposed to develop symbolic and dynamic techniques to analyze the Linux KBuild system.

4. “Predictive Failure Avoidance”, ARO (W911NF1910054, subcontracted from UVA to UNL), \$550K (my portion \$160K). Co-PI: Nguyen (PI: Matthew Dwyer)

**Description** We proposed to develop techniques to predict and avoid program errors.

### 3.4 Research Awards and Patents

#### 3.4.1 Patents

1. “FLACK: Counterexample-Guided Fault Localization for Alloy Models” **pending**  
Filed with U.S. Patent and Trademark Office in 8/2021, serial# 63/233,181

#### 3.4.2 Research Awards and Recognition (International and National)

1. NSF CISE Career Research Initiation Initiative Award (**CRII**) 2020
2. **10-year Most Influential Paper Award**, ACM/SIGSOFT and IEEE/TCSE 2019  
Award given for my paper [C28](#) presented at the International Conference on Software Engineering in 2009
3. **10-year Impact Award**, ACM/SIGEVO 2019  
Award given for my paper [C30](#) presented at the Genetic and Evolutionary Computation Conference in 2009
4. Sigma Xi Award for Excellence in Research, UNM 2014  
Voted on by the faculty of the College of Engineering at the University of New Mexico-Albuquerque.  
Awarded annually to one student with outstanding research record
5. Distinguished Paper Award [[C27](#)], International Conference on Software Engineering 2012
6. Featured Article [[J3](#)], IEEE Transactions on Software Engineering 2012
7. Research Highlight [[J4](#)], Communication of ACM 2010
8. Distinguished Paper Award [[C28](#)], International Conference on Software Engineering 2009
9. **IFIP TC2 Manfred Paul Award for Excellence in Software: Theory and Practice**, \$1024, International Conference on Software Engineering 2009
10. Best Paper Award (Ant Colony Optimization & Swarm Intelligence Track) [[C29](#)] Genetic and Evolutionary Computation Conference 2009
11. Best Paper Award (Genetic Programming Track) [[C30](#)], Genetic and Evolutionary Computation Conference 2009

12. **ACM SIGEVO “Hummies” Gold Medal Award**, \$10000, ACM SIGVO 2009.  
For human-competitive results produced by genetic and evolutionary computation
13. Best Short Paper and Best Presentation [C31], \$270, Workshop on Search-Based Software Testing 2009
14. Outstanding Submission [C32], High Performance Embedded Computing Workshop 2007
15. Best Paper Award [C38], International Conference on Informatics in Control Automation and Robotics 2006
16. Incentive Award, Naval Research Laboratory (NRL) 2005  
Award given for my internship at NRL (2 peer-reviewed conference papers for work performed during the first 6 months [C44,C43] and in total 12 conference and journal papers in 2 years)

### 3.5 Other Research Accomplishments

- Dean’s Dissertation Fellowship, UNM, \$8K 2012–2013  
Voted on by the faculty. Awarded annually to two graduating students based on academic achievements
- Walter Karplus Research Grant, \$2.3K, IEEE Computational Intelligence Society 2009  
Summer scholarship funding for graduate students with promising research projects
- Space Grant Fellowship, \$15K, NASA 2008–2009

## 4 Teaching

### 4.1 Courses

**Note** <sup>†</sup> a new course I developed

- OO Software Specification and Construction (graduate/undergraduate)
  - GMU: Fall 2022, Spring 2022, Fall 2021
  - Online course<sup>†</sup>: develop an online version of this course for GMU through Wiley publishing, Fall 2022
- Compiler Construction<sup>†</sup> (graduate/undergraduate)
  - UNL: Spring 2020, Spring 2021
- Software Testing, Verification, and Analysis<sup>†</sup> (undergraduate)
  - UNL: Fall 2019, Fall 2020
- Automata, Computation, and Formal Languages (graduate)
  - UNL: Spring 2017, Spring 2018
- Software Engineering III (undergraduate)
  - UNL: Fall 2018
- Software Verification Seminar<sup>†</sup> (graduate)
  - UNL: Fall 2016, Fall 2017, Spring 2019, Spring 2020, Spring 2021

### 4.2 Students

#### 4.2.1 Current

1. Hai Duong (Ph.D. student)

- Co-author of [C6](#)
- 2. Didier Ishimwe (Ph.D. student) Fall 2019–current
  - Co-author of [C5](#), [C7](#), [C15](#)
- 3. Linhan Li (Ph.D.) Spring 2021–current
  - UCARE award
- 4. [KimHao Nguyen](#) (Undergraduate) Spring 2020–current
  - **Outstanding Undergraduate Research Assistant** award Spring 2021
  - Winner, College of Arts and Science, Nebraska Student Research Days (for the GenTree work [C8](#)) Spring 2021
  - UCARE award and paid hourly through research grants
  - Garmin Computer Engineering scholarship
  - Co-author of [C3](#), [C5](#), [C6](#), [C7](#), [C8](#), [C11](#), [C17](#), [J1](#)

#### 4.2.2 Graduated

1. Guolong Zheng (Ph.D., UNL) graduated, May 2022
  - First job: A10Networks
  - Co-author of [C1](#), [C2](#), [C9](#), [C10](#), [C12](#), [C13](#), [C16](#), [C18](#), [C20](#)
2. Alexey Malyshev (UNL), Fulbright scholarship graduated: Spring 2021
  - First job: Oracle
  - Co-author of [C15](#)

### 4.3 Other Teaching Accomplishments

1. Mentor, Google Summer of Code, Project: Java PathFinder [[C20](#)] Summer 2018

## 5 Service

### 5.1 Professional Service

#### 5.1.1 Journal Editorships

1. Editor Board, Journal of Systems and Software 2017–2021

#### 5.1.2 Journals Reviewers

Reviewer for Transactions on Software Engineering (TSE), Journal of Systems and Software (JSS), Transactions on Software Engineering and Methodology (TOSEM), Journal of Symbolic Computation, Journal of Evolutionary Intelligence, Transactions on Evolutionary Computation,. Average: 5 journal papers reviewed per year

#### 5.1.3 Conference Committee Members (International)

##### Notes:

TPC: Technical Program Committee

1. TPC, International Symposium on Software Testing and Analysis (ISSTA) 2023

2. TPC, Java PathFinder Workshop (JPF)	2022
3. Proceedings Co-Chair, International Conference of Software Engineering (ICSE)	2022
4. TPC, Automated Software Engineering (ASE)	2020
5. New Faculty Symposium Panel, International Conference of Software Engineering (ICSE)	2020
6. Demo Program Committee, International Conference of Software Engineering (ICSE)	2020
7. Poster Program Committee, International Conference of Software Engineering (ICSE)	2020
8. TPC, Genetic Improvement Workshop	2020
9. TPC, Java PathFinder Workshop (JPF)	2019
10. TPC, Foundation of Software Engineering (FSE)	2019
11. TPC, Automated Software Engineering (ASE), Journal First PC	2019
12. TPC, Automated Software Engineering (ASE)	2018
13. TPC, Foundation of Software Engineering (FSE)	2018
14. Challenge Track Program Committee, Systems and Software Product Line (SPLC)	2018
15. TPC, Formal Methods and Models for System Design (MEMOCODE)	2018
16. External Review Committee, Programming Language Design and Implementation (PLDI)	2018
17. TPC, Formal Methods and Models for System Design (MEMOCODE)	2017
18. TPC, Genetic Improvement Workshop	2017
19. Artifact Evaluation Committee, Principles of Programming Languages (POPL)	2017
20. TPC, Formal Methods and Models for System Design (MEMOCODE)	2016

#### 5.1.4 Conference Committee Member (Regional)

1. Program Co-Organizer, Midwest Big Data Summer School, Software Analytic Track	2018
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#### 5.1.5 Research Review Panelists

1. Panelist, NSF Proposal Review Panel	2022, 2020, 2019
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#### 5.2 Other Services

1. Member, GMU CS Executive Committee	2022–
2. Member, GMU CS Web Committee	2022–
3. Member, GMU CS Graduate Admission	2021–
4. Member, UNL CSE Graduate CS Program Committee	2020–2021
5. Member, UNL CSE General Search Committee	2019–2020
6. Member, UNL CSE Awards Committee	2018–2019

7. Member, UNL CSE Software Engineering Search Committee	2018–2019
8. Member, UNL CSE Graduate Recruitment	2018
9. Member, UNL CSE Graduate Admission	2016–2020
10. Fellow, UNL Research Development Fellows Program	2016–2017
11. Member, UNL CSE Qualifying Exam Committee-Theory Track	2016–2018
12. Reviewer, UNL Graduate Travel Award Program Committee	2017

## 6 Miscellaneous

- My Erdős number is  $\leq 4$ 
  - ThanhVu Huy Nguyen  $\leftrightarrow$  Thang Bui (M.S. Adviser)  $\leftrightarrow$  Tom Leighton  $\leftrightarrow$  Fan Chung  $\leftrightarrow$  Pál Erdős
- **My Math/CS Genealogy:**
  - ThanhVu Huy Nguyen  $\leftrightarrow$  Deepak Kapur (Ph.D. Advisor)  $\leftrightarrow$  Barbara Liskov (Turing Award 2008)  $\leftrightarrow$  John McCarthy (Turing Award 1971)  $\leftrightarrow$  Solomon Lefschetz  $\leftrightarrow$  William Story  $\leftrightarrow$  ...
  - ThanhVu Huy Nguyen  $\leftrightarrow$  Stephanie Forrest (Ph.D. Advisor)  $\leftrightarrow$  John Holland  $\leftrightarrow$  Arthur Burks  $\leftrightarrow$  Cooper Langford  $\leftrightarrow$  Edwin Boring  $\leftrightarrow$  Edward Titchener  $\leftrightarrow$  ...