

# TIANYI ZHANG

Assistant Professor in Computer Science  
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## RESEARCH INTERESTS

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Human-Computer Interaction, Human-AI Interaction, Software Engineering, Mining Software Repositories, Program Synthesis, Software Evolution.

## EDUCATION

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**Ph.D. in Computer Science** *June 2019*  
University of California, Los Angeles

**Bachelor of Science, Computer Science** *June 2013*  
Huazhong University of Science and Technology, Wuhan, China

## HONORS AND AWARDS

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**ESEC/FSE 2022 Distinguished Reviewer Award**

**Ross-Lynn Research Scholar Fund**  
*Purdue University, 2022*

**Societal Impact Fellowship**  
*Purdue University, 2022*

**Agricultural Science and Extension for Economic Development Grant (co-PI)**  
*Purdue University, 2022*

**CHI 2021 Best Paper Honorable Mention Award**

**VAHC 2021 Best Paper Honorable Mention Award**

**2020 Distinguished Reviewer for ACM Transactions on Software Engineering and Methodology (TOSEM)**

**UCLA Dissertation Year Fellowship**  
*University of California, Los Angeles, 2017*

**Google Outstanding Graduate Student Research Award**  
*University of California, Los Angeles, 2017*

**Teaching Award in Recognition of Excellence in Teaching**  
*The University of Texas at Austin, 2014*

## PEER-REVIEWED CONFERENCE PAPERS

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\* denotes equal contribution.

- [C.21] **INTENT: Interactive Tensor Transformation Synthesis**  
Zhanhui Zhou\*, Man To Tang\*, Qiping Pan\*, Shangyin Tan, Xinyu Wang, **Tianyi Zhang**  
In *Proceedings of the 33rd ACM User Interface Software and Technology Symposium (UIST 2022)*, 16 pages, ACM, 2022.

- [C.20] **Concept-Labeled Examples for Library Comparison**  
Litao Yan, Miryung Kim, Björn Hartmann, **Tianyi Zhang**, Elena Glassman  
In *Proceedings of the 33rd ACM User Interface Software and Technology Symposium (UIST 2022)*, 16 pages, ACM, 2022.
- [C.19] **Scenario-based Test Reduction and Prioritization for Multi-Module Autonomous Driving Systems**  
Yao Deng, Xi Zheng, Mengshi Zhang, Guannan Lou, **Tianyi Zhang**  
In *Proceedings of the 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2022)*, 12 pages, ACM, 2022 (Acceptance Rate: 22%).
- [C.18] **Testing of Autonomous Driving Systems: Where Are We and Where Should We Go?**  
Guannan Lou, Yao Deng, Xi Zheng, Mengshi Zhang, **Tianyi Zhang**  
In *Proceedings of the 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2022)*, 12 pages, ACM, 2022 (Acceptance Rate: 22%).
- [C.17] **Expectation vs. Experience: Evaluating the Usability of Code Generation Tools Powered by Large Language Models**  
Priyan Vaithilingam, **Tianyi Zhang**, Elena Glassman  
In *Proceedings of the 2022 Conference on Human Factors in Computing Systems (CHI 2022 Late-Breaking Work)*, 10 pages, ACM, 2022.
- [C.16] **When Cyber-Physical Systems Meet AI: A Benchmark, an Evaluation, and a Way Forward**  
Jiayang Song, Deyun Lyu, Zhenya Zhang, Zhijie Wang, **Tianyi Zhang**, Lei Ma  
In *Proceedings of the 44th International Conference on Software Engineering (ICSE 2022 Industry Track)*, 10 pages, ACM, 2022.
- [C.15] **Interpretable Program Synthesis**  
**Tianyi Zhang**, Zhiyang Chen, Yuanli Zhu, Priyan Vaithilingam, Xinyu Wang, Elena L. Glassman  
In *Proceedings of the 2021 Conference on Human Factors in Computing Systems (CHI 2021)*, pages 105:1–105:16, ACM, 2021 (Acceptance Rate: 26%).
- [C.14] **Visualizing Examples of Deep Neural Networks at Scale 🏆 Honorable Mention Award**  
Litao Yan, Elena L. Glassman, **Tianyi Zhang**  
In *Proceedings of the 2021 Conference on Human Factors in Computing Systems (CHI 2021)*, pages 313:1–313:14, ACM, 2021 (Acceptance Rate: 26%).
- [C.13] **Interactive Program Synthesis by Augmented Examples**  
**Tianyi Zhang**, London Lowmanstone, Xinyu Wang, Elena L. Glassman  
In *Proceedings of the 33rd ACM User Interface Software and Technology Symposium (UIST 2020)*, pages 627-648, ACM, 2020 (Acceptance Rate: 22%).
- [C.12] **Enabling Data-Driven API Design with Community Usage Data: A Need-Finding Study**  
**Tianyi Zhang**, Björn Hartmann, Miryung Kim, Elena L. Glassman  
In *Proceedings of the 2020 Conference on Human Factors in Computing Systems (CHI 2020)*, pages 1-13, ACM, 2020 (Acceptance Rate: 24%).
- [C.11] **JShrink: In-depth Investigation into Debloating Modern Java Applications**  
Bobby Bruce\*, **Tianyi Zhang\***, Jaspreet Arora, Guoqing Harry Xu, Miryung Kim  
In *Proceedings of the 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020)*, pages 135-146, ACM, 2020 (Acceptance Rate: 28%).
- [C.10] **An Analysis of Adversarial Attacks and Defenses on Autonomous Driving Models**  
Yao Deng, James Xi Zheng, **Tianyi Zhang**, Chen Chen, Guannan Lou, Miryung Kim  
In *Proceedings of the 2020 IEEE International Conference on Pervasive Computing and Communications (PerCom 2020)*, pages 1-10, IEEE, 2020 (Acceptance Rate: 15%).

- [C.9] **Exempla Gratis (E.G.): Code Examples for Free**  
 Celeste Barnaby, Koushik Sen, **Tianyi Zhang**, Elena L. Glassman, Satish Chandra  
 In *Proceedings of the 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020 Industry Track)*, pages 1353-1364, ACM, 2020  
 (Acceptance Rate: 36%).
- [C.8] **ICS-Assist: Intelligent Customer Inquiry Resolution Recommendation in Online Customer Service for Large E-Commerce Businesses**  
 Min Fu, Jiwei Guan, James Xi Zheng, Jie Zhou, Jianchao Lu, **Tianyi Zhang**, Shoujie Zhuo, Lijun Zhan, Jian Yang  
 In *Proceedings of the 18th International Conference on Service Oriented Computing (ICSOC 2020)*, pages 370-385, Springer, 2020 (Acceptance Rate: 17%).
- [C.7] **Analyzing and Supporting Adaptation of Online Code Examples**  
**Tianyi Zhang**, Di Yang, Cristina Lopes, Miryung Kim  
 In *Proceedings of the 41th International Conference on Software Engineering (ICSE 2019)*, pages 316-327, IEEE, 2019 (Acceptance Rate: 21%).
- [C.6] **Active Inductive Logic Programming for Code Search**  
 Aishwarya Sivaraman, **Tianyi Zhang**, Guy Van den Broeck, Miryung Kim  
 In *Proceedings of the 41th International Conference on Software Engineering (ICSE 2019)*, pages 292-303, IEEE, 2019 (Acceptance Rate: 20.6%).
- [C.5] **An Empirical Study of Common Challenges in Developing Deep Learning Applications**  
**Tianyi Zhang\***, Cuiyun Gao\*, Lei Ma, Michael R. Lyu, Miryung Kim  
 In *Proceedings of the 30th International Symposium on Software Reliability Engineering (ISSRE 2019)*, 12 pages, IEEE, 2019 (Acceptance Rate: 31.3%).
- [C.4] **Are Code Examples on an Online Q&A Forum Reliable? A Study of API Misuse on Stack Overflow**  
**Tianyi Zhang**, Ganesha Upadhyaya, Anastasia Reinhardt, Hridesh Rajan, Miryung Kim  
 In *Proceedings of the 40th International Conference on Software Engineering (ICSE 2018)*, pages 886-896, ACM, 2018 (Acceptance Rate: 21%).
- [C.3] **Visualizing API Usage Examples at Scale**  
 Elena L. Glassman\*, **Tianyi Zhang\***, Björn Hartmann, Miryung Kim  
 In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI 2018)*, pages 580-591, ACM, 2018 (Acceptance Rate: 26%).
- [C.2] **Automated Transplantation and Differential Testing for Clones**  
**Tianyi Zhang**, Miryung Kim  
 In *Proceedings of the 39th International Conference on Software Engineering (ICSE 2017)*, pages 665-676, IEEE, 2017 (Acceptance Rate: 16%).
- [C.1] **Interactive Code Review for Systematic Changes**  
**Tianyi Zhang**, Myoungkyu Song, Joseph Pinedo, Miryung Kim  
 In *Proceedings of the 37th International Conference on Software Engineering (ICSE 2015)*, Volume 1, pages 111-122. IEEE, 2015 (Acceptance Rate: 19%).

## JOURNAL PAPERS

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- [J.1] **Can Steering Wheel Detect Your Driving Fatigue?**  
 Jianchao Lu, Xi Zheng, Lihong Tang, **Tianyi Zhang**, Quan Z. Sheng, Chen Wang, Jiong Jin, Shui Yu, Wanlei Zhou  
 In *IEEE Transactions on Vehicular Technology*, Volume 70, pages 5537-5550, IEEE, 2021.

## WORKSHOP PAPERS

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- [W.2] **Interactive Cohort Analysis and Hypothesis Discovery by Exploring Temporal Patterns in Population-Level Health Records** 🏆 **Honorable Mention Award**  
Tianyi Zhang, Thomas H. McCoy Jr., Roy H. Perlis, Finale Doshi-Velez, Elena Glassman  
In *12th Workshop on Visual Analytics in Healthcare (VAHC 2021) co-located with IEEE VIS*, 5 pages, IEEE, 2021.
- [W.1] **BMT: Behavior Driven Development-based Metamorphic Testing for Autonomous Driving Models**  
Yao Deng, Guannan Lou, Xi Zheng, **Tianyi Zhang**, Miryung Kim, Huai Liu, Chen Wang, Tsong Yueh Chen  
In *2021 IEEE/ACM 6th International Workshop on Metamorphic Testing*, pages 32-36, IEEE, 2021.

## DEMO PAPERS, DATASET PAPERS, POSTERS

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- [D.4] **SOSum: A Dataset of Stack Overflow Post Summaries**  
Bonan Kou, Yifeng Di, Muhao Chen, Tianyi Zhang, **Tianyi Zhang**  
In *Proceedings of the 2022 IEEE/ACM 19th International Conference on Mining Software Repositories (MSR 2022)*, 5 pages, ACM, 2022.
- [D.3] **WebJShrink: A Web Service for Debloating Java Bytecode**  
Konner Macias, Mihir Mathur, Bobby R. Bruce, **Tianyi Zhang**, Miryung Kim  
In *Proceedings of the 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020)*, pages 1665-1669, ACM, 2020.
- [D.2] **Augmenting Stack Overflow with API Usage Patterns Mined from GitHub**  
Anastasia Reinhardt, **Tianyi Zhang**, Mihir Mathur, Miryung Kim  
In *Proceedings of the 26th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2018)*, pages 880-883, ACM, 2018.
- [P.1] **Grafter: Transplantation and Differential Testing for Clones**  
**Tianyi Zhang**, Miryung Kim  
In *Proceedings of the 40th International Conference on Software Engineering (ICSE 2018)*, pages 422-423, ACM, 2018.
- [D.1] **Critics: An Interactive Code Review Tool for Searching and Inspecting Systematic Changes**  
**Tianyi Zhang**, Myoungkyu Song, Miryung Kim  
In *Proceedings of the 22nd ACM SIGSOFT International Symposium on Foundations of Software Engineering (FSE 2014)*, pages 755-758, ACM, 2014.

## BOOK CHAPTERS

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- [B.1] **Software Evolution**  
Miryung Kim, Na Meng, **Tianyi Zhang**  
In *Handbook of Software Engineering*, pages 223-284, Springer, 2019.

## SERVICES

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**Organizing Committee:**  
ESEC/FSE 2022 Publication Co-Chair

**Program Committee:**  
ICSE Technical Track 2024

ESEC/FSE Technical Track 2022  
MSR Technical Track 2022  
ISSRE Technical Track 2022  
SANER Technical Track 2023  
The ACM/IEEE Conference on AI Engineering (CAIN) Technical Track 2022  
International Workshop on Human Aspects of Types and Reasoning Assistants (HATRA) 2021, 2022  
ICSE Poster Track 2022  
ESEC/FSE Demonstration Track 2020, 2021  
ICSE Artifact Evaluation 2019, 2020  
ESEC/FSE Artifact Evaluation 2021  
ASE Artifact Evaluation 2021  
MSR Data Showcase Track 2021, 2022  
PerCom Work-in-Progress Track 2020  
Innovations in Software Engineering Conference - Student Research Competition Track 2022  
**ACM TOSEM Board of Distinguished Reviewers 2020**

**Reviewer:**

ICML 2022  
CSCW 2020, 2021  
UIST 2020, 2021  
DIS 2021

**Journal Reviewer:**

Transactions on Software Engineering (TSE) 2018-2022  
Transactions on Computer-Human Interaction (TOCHI) 2019, 2020  
Transactions on Software Engineering and Methodology (TOSEM) 2019, 2020, 2022  
Empirical Software Engineering (EMSE) 2019-2022  
Information and Software Technology (IST) 2019, 2021  
IEEE Software 2019, 2020

**UCLA Graduate Society of Women Engineers Mentorship Program 2018-2019**

**UCLA Computer Science Ph.D. Open House Panelist 2018**

## INVITED TALKS

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Interactive Debugging and Testing Support for Deep Learning  
Strange Loop Conference 2022  
*Strange Loop, Sept 22-24, 2022*

Human-AI Interaction  
Youth in Computer Science Summer Program  
*Youth Inventa, June 13, 2022*

Rethinking Automated Code Generation with Human-Centered Intelligence  
Guest Lecture, ECE 720 Advanced Topics in Software Engineering and Intelligent Systems  
*University of Alberta, Mar 24, 2022*

Rethinking Modern Programming Tools with Human-Centered Intelligence  
AI Seminar at Information Sciences Institute  
*University of Southern California, Sept 27, 2021*

Supporting and Democratizing Modern Programming with Big Code and Interactive Program Synthesis  
Harvard ABCD WWW Seminar  
*Harvard University, Nov 18, 2020*

Interactive and White-box Program Synthesis  
Guest Lecture, EECS 598 Program Synthesis: Techniques and Applications  
*University of Michigan, Ann Arbor, Nov 17, 2020*

Programming at Scale by Harnessing the Power of Big Code  
Facebook  
*Menlo Park, CA, Nov 3, 2019*

Visualizing and Assessing Code Examples at Scale  
Guest Lecture, CS230 Software Engineering in Spring 2018 and Spring 2019  
*University of California, Los Angeles*

Peer Code Review: Practices and Advanced Techniques  
Guest Lecture, CS230 Software Engineering in Spring 2018 and Spring 2019  
*University of California, Los Angeles*

Visualizing and Assessing Code Examples at Scale  
ONR TPCP Grant Kickoff Meeting  
*University of California, Los Angeles, Jan 26, 2018*

Automated Test Reuse via Code Transplantation  
Dagstuhl Seminar in Automated Program Repair  
*Schloss Dagstuhl, Germany, Jan 9-13, 2017*

Towards Differential Testing of Similar Repairs  
Air Force Research Laboratory Grant PI Meeting  
*University of Virginia, Aug 9, 2016*

Interactive Code Review for Systematic Edits  
SoCal Programming Languages and Systems Workshop  
*University of California, San Diego, Dec 6, 2014*

## RESEARCH & WORK EXPERIENCE

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<b>Purdue University</b> <i>Assistant Professor in Computer Science</i>	<i>August 2021 — Present</i>
<b>Harvard University</b> <i>Postdoctoral Fellow</i>	<i>July 2019 — June 2021</i>
<b>University of California, Los Angeles</b> <i>Graduate Research Assistant</i>	<i>Oct. 2014 — June 2019</i>
<b>Microsoft Research</b> , Redmond, WA <i>Research Intern</i>	<i>Jun. 2015 — Sept. 2015</i>
<b>Salesforce.com</b> , San Francisco, CA <i>Quality Engineer Intern</i>	<i>June 2014 — Aug. 2014</i>
<b>The University of Texas at Austin</b> <i>Graduate Research Assistant</i>	<i>Jan. 2014 — May. 2014</i>
<b>Microsoft</b> , Beijing, China <i>Software Development Engineer Intern</i>	<i>July 2012 — Sept. 2012</i>

## TEACHING EXPERIENCE

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<b>Purdue University</b> <i>Instructor, CS59300 Human-AI Interaction</i>	<i>Fall 2022</i>
<b>Purdue University</b> <i>Instructor, CS49000 Human-Computer Interaction</i>	<i>Spring 2022</i>
<b>Purdue University</b> <i>Instructor, CS59200 Human-AI Interaction</i>	<i>Fall 2021</i>
<b>University of California, Los Angeles</b> <i>Teaching Assistant, CS230 Software Engineering</i>	<i>Spring 2017</i>
<b>University of California, Los Angeles</b> <i>Teaching Assistant, CS130 Software Engineering</i>	<i>Fall 2016</i>
<b>University of California, Los Angeles</b> <i>Teaching Assistant, CS130 Software Engineering</i>	<i>Fall 2015</i>
<b>The University of Texas at Austin</b> 🏆 <i>Teaching Award</i> <i>Teaching Assistant, EE461L Software Engineering and Design Laboratory</i>	<i>Fall 2013</i>

## ADVISED STUDENTS

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Zhi Tu, <i>PhD Student, Purdue</i>	<i>Sept 2022 — Present</i>
Ruixin Wang, <i>PhD Student, Purdue</i>	<i>Sept 2022 — Present</i>
Yifeng Di, <i>PhD Student, Purdue</i>	<i>Jan 2022 — Present</i>
WeiHao Chen, <i>PhD Student, Purdue</i>	<i>Jan 2022 — Present</i>
Samia Kabir, <i>PhD Student, Purdue</i>	<i>Sept 2021 — Present</i>
Bonan Kou, <i>PhD Student, Purdue</i>	<i>Sept 2021 — Present</i>
Mohamed Yilmaz Ibrahim, <i>Master Student, Purdue</i>	<i>Sept 2021 — Present</i>
Yuan Tian, <i>Master Student, Purdue</i>	<i>Sept 2021 — Present</i>
Hasan Sultan, <i>Undergraduate Student, Purdue</i>	<i>Oct 2021 — Present</i>
Joel Chiang, <i>Undergraduate Student, Purdue</i>	<i>Sept 2021 — Present</i>
Yao Deng, <i>Co-advised PhD Student from Macquarie University, Australia</i>	<i>Jan. 2019 — Present</i>
Man To Tang, <i>Undergraduate Student, Purdue, Now at Microsoft</i>	<i>Sept 2021 — June 2022</i>
Shangyin Tan, <i>Undergraduate Student, Purdue, Now PhD at UC Berkeley</i>	<i>Sept 2021 — Apr 2022</i>
London Lowmanstone, <i>Undergraduate Student, Harvard</i> <i>Now PhD at University of Minnesota, Twin City</i>	<i>Feb 2020 — Sept 2020</i>
Litao Yan, <i>Master Student, Harvard, Now PhD at UPenn</i>	<i>Oct 2019 — Aug 2022</i>
Chenlu Wang, <i>Master Student, Harvard, Now at Google</i>	<i>Oct 2019 — Jun 2020</i>
Jaspreet Arora, <i>Master Student, UCLA, Now at Google</i>	<i>June 2019 — Sept 2019</i>
Guannan Lou, <i>Co-advised PhD Student from Macquarie University, Australia</i>	<i>Jan. 2019 — Jun. 2022</i>
Winnie Sun, <i>Undergraduate Student, UCLA, Now at Two Sigma</i>	<i>Jan. 2019 — Jun 2019</i>

Konner Macias, <i>Undergraduate Student, UCLA, Now at Northrop Grumman</i>	<i>Oct. 2018 — May 2019</i>
Lekha Priya Patil*, <i>Undergraduate Student, UC Berkeley</i>	<i>June 2018 — Sept. 2018</i>
Mihir Mathur, <i>Undergraduate Student, UCLA, now at Lyft</i>	<i>Jan. 2018 — May 2019</i>
Zongheng Ma, <i>Master Student, UCLA, now at Google</i>	<i>Jan. 2018 — Jan. 2019</i>
Aishwarya Sivaraman, <i>PhD student, UCLA</i>	<i>Oct. 2017 — Jan. 2019</i>
Anastasia Reinhardt*, <i>Undergraduate Student at George Fox University, Now PhD at University of Washington</i>	<i>May 2017 — Aug. 2017</i>
Andrew Lin, <i>Undergraduate Student, UCLA, Now at Nordstrom</i>	<i>Oct. 2016 — May 2018</i>
Richter Macdonald, <i>Local High School Student in LA</i>	<i>Oct. 2016 — Aug. 2017</i>
Joseph Pinedo, <i>Undergraduate Student, UT Austin, Now at Sogeti</i>	<i>Jan. 2014 — May 2014</i>

\* Students were summer interns at UCLA

## REFERENCES

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### **Miryung Kim**

Professor

*University of California, Los Angeles*

✉ miryung@cs.ucla.edu

### **Elena L. Glassman**

Stanley A. Marks and William H. Marks Assistant Professor

*Harvard University*

✉ glassman@seas.harvard.edu

### **Björn Hartmann**

Associate Professor

*University of California, Berkeley*

✉ bjoern@eecs.berkeley.edu

### **Westley Weimer**

Professor

*University of Michigan, Ann Arbor*

✉ weimerw@umich.edu

### **Christian Bird**

Principal Researcher

*Microsoft Research*

✉ Christian.Bird@microsoft.com