

SERGEY MECHTAEV

Assistant Professor, Peking University
Room 1542, Science Building #1, Peking University, No. 5 Yiheyuan Road,
Beijing, 100871, China

mechtaev@pku.edu.cn
mechtaev.com
github.com/mechtaev
Google Scholar

EDUCATION

Doctor of Philosophy, National University of Singapore, School of Computing 2012 – 2018
Thesis: *Semantic Program Repair*. Supervisor: Abhik Roychoudhury.
Specialist, Saint Petersburg State University, Mathematics and Mechanics Faculty 2006 – 2011
Thesis: *Generic data processing library for Ocaml*. Supervisor: Dmitry Boulytchev.

EMPLOYMENT

Assistant Professor, Peking University, Beijing, China Aug 2024 – present
Associate Professor, University College London, London, United Kingdom Jun 2024
Lecturer, University College London, London, United Kingdom Feb 2019 – Jun 2024
Research Assistant, National University of Singapore, Singapore Mar 2017 – Jan 2019
Intern, Fondazione Bruno Kessler, Trento, Italy Feb 2016 – Jun 2016
Technician Programmer, Computer Vision System LLC, Saint Petersburg, Russia Mar 2012 – Jul 2012
Programmer, Lanit-Tercom, Saint Petersburg, Russia May 2011 – Mar 2012

AWARDS

ACM SIGSOFT Distinguished Paper Award 2026
For ICSE'26 paper “HoarePrompt: Structural Reasoning About Program Correctness in Natural Language”.
ACM SIGSOFT Distinguished Paper Award 2024
For ICSE'24 SEIP paper “User-Centric Deployment of Automated Program Repair at Bloomberg”.
F1X won Functional Errors/C track of APR-COMP 2024 2024
F1X, a program repair tool described in our TOSEM 2018 paper “Test-equivalence Analysis for Automatic Patch Generation” won the Functional Errors/C track of APR-COMP 2024.
ACM SIGSOFT Distinguished Paper Award 2023
For ICSE'23 paper “Rete: Learning Namespace Representation for Program Repair”.
National University of Singapore IMDA Excellence Prize 2019
For School of Computing's best PhD thesis “Semantic Program Repair”.
ACM SIGSOFT Outstanding Doctoral Dissertation Award 2019
For PhD thesis “Semantic Program Repair”.
National University of Singapore Research Achievement Award 2016
For my research on automated program repair.
ACM ICPC NEERC Northern Subregional Contest Honorable Mention 2007
For my participation in ACM ICPC programming competition.

GRANTS

UCL-PKU, Peking University-University College London Strategic Partner Funds 2026
For the proposal “Prompt Compression for Efficient and Sustainable AI-Driven Software Engineering” with Prof. Federica Sarro
NSFC, Key Research Project 2025
For the proposal “Neurosymbolic High-Confidence Code Generation and Optimization” led by Prof. Yingfei Xiong in collaboration with Prof. Wen-Pin Jiao, Prof. Yanlin Wang, Prof. Yang Yu, Prof. Yang Liu, Prof. Wei Zhao, Prof. Siyuan Jiang
PKU-KU, Peking University-Korea University Joint Research Funding 2025
For the proposal “Counterfactual inference for detecting and repairing hallucinations of code LLMs” with Prof. Dongsun Kim
NSFC, Excellent Young Scientists Fund (Overseas) 2024
For my proposal “Symbolic Executon of Datalog for Program Repair”

B-Assist is deployed at Bloomberg

2023

B-Assist, described in our ICSE SEIP'24 paper "User-Centric Deployment of Automated Program Repair at Bloomberg", was deployed at Bloomberg across 1000 repositories.

Angelix is deployed at IIT Kanpur

2017

My program repair tool Angelix is deployed at IIT Kanpur for intelligent tutoring, as described in FSE'17 paper "A feasibility study of using automated program repair for introductory programming assignments".

PUBLICATIONS

*Underline marks my name; * joint first authorship; † corresponding authorship.*

- [1] Haoxiang Jia, Earl T. Barr, and Sergey Mechtaev[†]. "Compressing Code Context for LLM-based Issue Resolution." *International Conference on Automated Software Engineering (ASE)*, 2026.
- [2] Dimitrios Stamatios Bouras and Sergey Mechtaev[†]. "Defusing Logic Bombs in Symbolic Execution with LLM-Generated Ghost Code." *International Symposium on Software Testing and Analysis (ISSTA)*, 2026.
- [3] Yihan Dai, Sijie Liang, Haotian Xu, Peichu Xie, and Sergey Mechtaev[†]. "Reducing Hallucinations in LLM-Generated Code via Semantic Triangulation." Preprint, 2026.
- [4] Yihan Dai, Dimitrios Stamatios Bouras, Haoxiang Jia, and Sergey Mechtaev. "Statistical Independence Aware Caching for LLM Workflows." *International Workshop on Large Language Models for Code (LLM4Code@ICSE)*, 2026.
- [5] Dimitrios Stamatios Bouras, Yihan Dai, Tairan Wang, Yingfei Xiong, and Sergey Mechtaev[†]. "HoarePrompt: Structural Reasoning About Program Correctness in Natural Language." *International Conference on Software Engineering (ICSE)*, 2026. **ACM SIGSOFT Distinguished Paper Award.**
- [6] Haoxiang Jia, Robbie Morris, He Ye, Federica Sarro, and Sergey Mechtaev[†]. "Automated Repair of Ambiguous Problem Descriptions for LLM-Based Code Generation." *International Conference on Automated Software Engineering (ASE)*, 2025.
- [7] Dimitrios Stamatios Bouras, Justyna Petke, and Sergey Mechtaev. "LLM-Assisted Crossover in Genetic Improvement of Software." *International Workshop on Genetic Improvement (GI@ICSE)*, 2025.
- [8] Nikhil Parasaram, Huijie Yan*, Boyu Yang*, Zineb Flahy, Abriele Qudsi, Damian Ziaber, Earl T. Barr, and Sergey Mechtaev[†]. "The Fact Selection Problem in LLM-Based Program Repair." *International Conference on Software Engineering (ICSE)*, 2025.
- [9] Zhiyu Fan, Haifeng Ruan, Sergey Mechtaev, and Abhik Roychoudhury. "Oracle-guided Program Selection from Large Language Models." *International Symposium on Software Testing and Analysis (ISSTA)*, 2024.
- [10] Sergey Mechtaev and Shin Hwei Tan. "F1X at APR-COMP 2024." *International Competition on Automated Program Repair (APR-COMP)*, 2024. **Winner of APR-COMP 2024 Functional Errors/C Track.**
- [11] David Williams, James Callan, Serkan Kirbas, Sergey Mechtaev, Justyna Petke, Thomas Prideaux-Ghee, and Federica Sarro. "User-Centric Deployment of Automated Program Repair at Bloomberg." *International Conference on Software Engineering - Software Engineering in Practice (ICSE SEIP)*, 2024. **ACM SIGSOFT Distinguished Paper Award.**
- [12] Nikhil Parasaram, Earl T. Barr, Sergey Mechtaev, and Marcel Boehme. "Precise Data-Driven Approximation for Program Analysis via Fuzzing." *International Conference on Automated Software Engineering (ASE)*, 2023.
- [13] Liu Yu, Sergey Mechtaev[†], Pavle Subotic, and Abhik Roychoudhury. "Program Repair Guided by Datalog-Defined Static Analysis." *International Conference on the Foundations of Software Engineering (FSE)*, 2023.
- [14] Earl T. Barr, Jonathan Bell, Michael Hilton, Sergey Mechtaev, and Christopher Timperley. "Continuously Accelerating Research." *International Conference on Software Engineering - New Ideas and Emerging Results (ICSE NIER)*, 2023.
- [15] Nikhil Parasaram, Earl T. Barr, and Sergey Mechtaev. "Rete: Learning Namespace Representation for Program Repair." *International Conference on Software Engineering (ICSE)*, 2023. **ACM SIGSOFT Distinguished Paper Award.**
- [16] Yu Liu, Pavle Subotic, Emmanuel Letier, Sergey Mechtaev, and Abhik Roychoudhury. "Efficient SMT-based Network Fault Tolerance Verification." *International Symposium on Formal Methods (FM)*, 2023.
- [17] Chris Tomy*, Tingmao Wang*, Earl T. Barr, and Sergey Mechtaev. "Modus: A Datalog Dialect for Building Container Images." *International Conference on the Foundations of Software Engineering (FSE)*, 2022.
- [18] Jiang Zhang, Ivan Beschastnikh, Sergey Mechtaev, and Abhik Roychoudhury. "Fair Decision Making via Automated Repair of Decision Trees." *International Workshop on Equitable Data and Technology (FairWare)*,

2022.

- [19] Nikhil Parasaram, Earl T. Barr, and Sergey Mechtaev. “Trident: Controlling Side Effects in Automated Program Repair.” *Transactions on Software Engineering* (TSE), 2021.
- [20] Maria Kechagia, Sergey Mechtaev, Federica Sarro, and Mark Harman. “Evaluating Automatic Program Repair Capabilities to Repair API Misuses.” *Transactions on Software Engineering* (TSE), 2021.
- [21] Yang Hu, Umair Z. Ahmed, Sergey Mechtaev, Ben Leong, and Abhik Roychoudhury. “Re-factoring Based Program Repair Applied to Programming Assignments.” *International Conference on Automated Software Engineering* (ASE), 2019.
- [22] Xiang Gao, Sergey Mechtaev, and Abhik Roychoudhury. “Crash-Avoiding Program Repair.” *International Symposium on Software Testing and Analysis* (ISSTA), 2019.
- [23] Sergey Mechtaev. “Semantic Program Repair.” *National University of Singapore, PhD Thesis*, 2018. **ACM SIGSOFT Outstanding Doctoral Dissertation Award**.
- [24] Sergey Mechtaev, Alberto Griggio, Alessandro Cimatti, and Abhik Roychoudhury. “Symbolic Execution with Existential Second-Order Constraints.” *International Conference on the Foundations of Software Engineering* (FSE), 2018.
- [25] Sergey Mechtaev, Xiang Gao, Shin Hwei Tan, and Abhik Roychoudhury. “Test-equivalence Analysis for Automatic Patch Generation.” *Transactions on Software Engineering and Methodology* (TOSEM), 2018.
- [26] Sergey Mechtaev*, Manh-Dung Nguyen*, Yannic Noller, Lars Grunske, and Abhik Roychoudhury. “Semantic Program Repair Using a Reference Implementation.” *International Conference on Software Engineering* (ICSE), 2018.
- [27] Jooyong Yi, Shin Hwei Tan, Sergey Mechtaev, Marcel Boehme, and Abhik Roychoudhury. “A Correlation Study between Automated Program Repair and Test-Suite Metrics.” *Empirical Software Engineering* (EMSE), 2017.
- [28] Shin Hwei Tan, Jooyong Yi, Yulis, Sergey Mechtaev, and Abhik Roychoudhury. “Codeflaws: A Programming Competition Benchmark for Evaluating Automated Program Repair Tools.” *International Conference on Software Engineering - Poster Track* (ICSE Poster), 2017.
- [29] Sergey Mechtaev, Jooyong Yi, and Abhik Roychoudhury. “Angelix: Scalable Multiline Program Patch Synthesis via Symbolic Analysis.” *International Conference on Software Engineering* (ICSE), 2016.
- [30] Sergey Mechtaev, Jooyong Yi, and Abhik Roychoudhury. “DirectFix: Looking for Simple Program Repairs.” *International Conference on Software Engineering* (ICSE), 2015.
- [31] Sergey Mechtaev. “Generic Programming Library for OCaml (In Russian).” *Saint Petersburg State University, Specialist Thesis*, 2011.
- [32] Sergey Mechtaev. “Eliminating boilerplate code in Objective Caml programs (In Russian).” *System Programming* (System Programming), 2011.
- [33] Dmitri Boulytchev and Sergey Mechtaev. “Efficiently Scrapping Boilerplate Code in OCaml.” *ML Family Workshop* (ML), 2011.

TEACHING

Lecturer , 04834580 Software Engineering (Honor Track), Peking University	Mar 2026 – Jun 2026
Lecturer , 04834580 Software Engineering (Honor Track), Peking University	Feb 2025 – May 2025
Lecturer , COMP0010 Software Engineering, University College London	Sep 2024 – Dec 2024
Lecturer , COMP0174 Practical Program Analysis, University College London	Jan 2024 – Mar 2024
Lecturer , COMP0010 Software Engineering, University College London	Sep 2023 – Dec 2023
Lecturer , COMP0174 Practical Program Analysis, University College London	Jan 2023 – Mar 2023
Lecturer , COMP0010 Software Engineering, University College London	Sep 2022 – Dec 2022
Lecturer , COMP0174 Practical Program Analysis, University College London	Jan 2022 – Mar 2022
Lecturer , COMP0010 Software Engineering, University College London	Sep 2021 – Dec 2021
Lecturer , COMP0010 Software Engineering, University College London	Sep 2020 – Dec 2020
Lecturer , COMP0010 Software Engineering, University College London	Sep 2019 – Dec 2019
Teaching Assistant , CS4218 Software Testing and Debugging, National University of Singapore	Jan 2015 – May 2015

STUDENTS

Yihan Dai , PhD Student, Peking University	Sep 2025 – present
Dimitrios Stamatios Bouras , PhD Student, Peking University	Oct 2024 – present
Haixiang Jia , PhD Student, Peking University	Sep 2024 – present

Thesis: *Addressing LLM Hallucinations in Software Engineering Tasks*.

Yu Liu, PhD Student, National University of Singapore

Sep 2020

Thesis: *A Static Program Repair Framework Based on Symbolic Datalog*. Co-advisor with Abhik Roychoudhury.

Nikhil Parasaram, PhD Student, University College London

Sep 2019 – Oct 2024

Thesis: *Synergising Program Analysis and Machine Learning for Program Repair*. First supervisor. Second supervisor is Earl T. Barr. First position: Uber (Programming Systems Team).

PROFESSIONAL SERVICE

- **Co-chair:** LMPL@SPLASH'25, APR@ICSE'25, APR@ICSE'24, APR@ICSE'23, CREST Open Workshop'23, APR@ICSE'22, ICSE SRC'22, APR@ICSE'21, APR@ICSE'20, CREST Open Workshop'20.
- **Program committee:** ICSE'27, OOPSLA'27, FSE'27, LMPL@SPLASH'26, ICSE'26, ICSE'25, FSE'25, ISSTA'25, ASE'25, ICSE'24, ASE'24, FSE SRC'24, FSE'23, ICSE Demo'22, FSE DS'22, FSE'21, ASE'21, ASE SRC'21, ASE'20, ASE'19.

Last updated: July 2026