

	<p>Abhik ROYCHOUDHURY</p> <p><a href="mailto:abhik@comp.nus.edu.sg">abhik@comp.nus.edu.sg</a></p> <p>+65 6516 8939</p>	<p>Provost's Chair Professor National University of Singapore (NUS)</p> <p><a href="https://abhikrc.com">https://abhikrc.com</a></p>
---	--	--

## Research Interests

- Program Analysis, Software Testing, Software Security, Trustworthy Systems.

**Education** Ph.D. in Computer Science, State University of New York at Stony Brook, 2000.

**Employment** National University of Singapore, School of Computing, since 2001.

- Professor, Computer Science Department (2014 - now).
  - Provost's Chair Professor (2020 – now).
- Associate Professor, Computer Science Department (2007-2014).
- Assistant Professor, Computer Science Department (2001-2007).

## Recent Projects and Initiatives

- Fuzz Testing, NRF National Cybersecurity R&D program, Lead PI, \$6.7M, 2023-27.
- Automated Program Repair, Ministry of Education Tier 3, Lead PI, \$7.5M, 2022-27.
- Software Recovery using Semantic Program Repair, DSO, Sole PI, \$1.8M, 2020-23.
- National Satellite of Excellence in Trustworthy Software Systems, Director, \$12M, 19-23.
- Descartes – Intelligent Modeling for Decision making in Critical Urban Systems, Co-director, NRF CREATE with CNRS France, \$25M, 2021-26.

## Selected Publications

- [SemFix: Program Repair via Semantic Analysis](#), ICSE 2013.
- [Coverage-based Greybox Fuzzing as Markov Chain](#), CCS 2016.
- [Directed Greybox Fuzzing](#), CCS 2017.
- [Angelix: Scalable Multi-line Program Patch Synthesis via Symbolic Analysis](#), ICSE 2016.
- [Automated Program Repair](#), Communications of the ACM Dec 2019.
- [AutoCodeRover: Autonomous Program Improvement](#), ISSTA 2024.

## Recent Awards

- NUS Outstanding Graduate Mentor Award (inaugural recipient), 2024.
- 2023 ICSE [Most Influential Paper Award](#) (Test-of-Time) for ICSE 2013 paper SemFix.
  - Award given since 1989, first time a paper outside N America/Europe awarded.
- IEEE TCSE New Directions Award 2022 (awarded jointly with Cristian Cadar).
  - For contributions to symbolic execution for software testing and repair.

## Significant Professional Service

- Steering Committee Chair, ACM SIGSOFT Foundations of Software Engineering (FSE).
  - General Chair, FSE 2022, held in Singapore.

- Program Co-chair, International Conference on Software Engineering (ICSE) 2024.
- Member of SE3 Committee coordinating the three major Software Engineering international conferences ICSE, FSE and ASE.
- Program Chair, Intl. Symposium on Software Testing and Analysis (ISSTA) 2016.
- Associate Editor, Communications of the ACM, from 2023.
- Associate Editor of ACM Transactions on Software Engineering and Methodology (2019-24), IEEE Transactions on Dependable and Secure Computing (2019 – 2023).
  - Editor-in-Chief, TOSEM Special Section, Security and Software Engineering.
- Lead of Foundational Research Capability Task force to study capabilities in Security and Data Privacy for Singapore (appointed by National Research Foundation), 2021–22.

### Translational Impact

- [AFLFast](#) and [AFLGo](#) as extended grey-box fuzzing tools, for detecting program vulnerabilities. AFLFast has been integrated to the regular AFL distribution.
- Set up and ran Singapore Cybersecurity Consortium in 2016-22, involving 25 companies, the first industry consortium in Computer Science in Singapore.
- [Angelix](#) and related tools for program repair, used for intelligent tutoring to teach programming to students, collaboration with IIT Kanpur, Monash Malaysia.

### Recent Student Placement

- Xiang Gao, PhD NUS → Beihang University, China as Associate Professor.
- Sergey Mechtaev, PhD NUS → University College London, UK Assoc Prof.
  - Winner of ACM SIGSOFT Outstanding Dissertation Award.
- Shin Hwei Tan, PhD NUS → Concordia Univ, Chaired Associate Professor.
- Van Thuan Pham, PhD NUS → University of Melbourne, Senior Lecturer.
- Marcel Böhme, PhD NUS → Max-Planck Institute (MPI), Germany, faculty member.
- Sudipta Chattopadhyay, PhD NUS → SUTD Singapore, Associate Professor.

### Recent Invited Lectures and Keynotes

- Invited Award Talk, International Conference on Software Engineering (ICSE), May 23.
- Invited Tutorial, Embedded Systems Week, October 2022.
- *Keynotes*: 17<sup>th</sup> Innovations in Software Engineering Conference (ISEC) 24, 27<sup>th</sup> Asia-Pacific Software Engg. Conf. (APSEC) 20, 4<sup>th</sup> IEEE/ACM Intl. Conf on Mobile Software Engg. and Systems (MobileSoft) 17, 21<sup>st</sup> Intl Symp on Real-time Computing (ISORC) 18.
- Distinguished Lectures at Max Planck Institute of Software Systems, KAIST Korea.

**Teaching** Introduced *Software Testing (undergrad)*, *Software Security (undergrad)* at NUS. Authored a textbook "[Embedded Systems and Software Validation](#)" under Elsevier in 2009.

- Introduced a course Foundations of SE, building an intelligent tutoring system for programming – linking Software Engineering teaching and programming teaching.

**Citations** <https://scholar.google.com.sg/citations?user=UxFWSJIAAAAJ&hl=en>

**Other Information** Singapore Citizen, Married, One son.