Abhik ROYCHOUDHURY

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LinkedIn

Provost's Chair Professor
National University of Singapore,
&
Senior Scientific Advisor
SonarSource SA.

Research Interests: Program Analysis, Software Security, AI agents.

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

Employment National University of Singapore (NUS), 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, CSA 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.
- AI for Program Reasoning, NRF AI for Science Program, Co-Lead PI, $10M, 2026-30.
- 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 (up to 5)

- SemFix: Program Repair via Semantic Analysis, ICSE 2013.
- Coverage-based Greybox Fuzzing as Markov Chain, CCS 2016.
- AutoCodeRover: Autonomous Program Improvement, ISSTA 2024.
- Directed Greybox Fuzzing, CCS 2017.
- Angelix: Scalable Multi-line Program Patch Synthesis via Symbolic Analysis, ICSE 2016.

Recent Honors and Awards

- Fellow of the ACM, 2024, "*for contributions to software testing and analysis including automated program repair and fuzz testing.*"
- 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).

Significant Professional Appointments

- Editor-in-Chief, ACM Transactions on Software Engineering and Methodology (TOSEM) from 2025.
- 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.
- Program Chair, Intl. Symposium on Software Testing and Analysis (ISSTA) 2016.
- Associate Editor, Communications of the ACM, from 2023.
- Chaired many award committees including ACM SIGSOFT Impact Paper Award 2024-25 and ACM SIGSAC Doctoral Dissertation Award in Security and Privacy, 2025.
- 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 (first one is most relevant)

- AutoCodeRover, NUS spin-off on AI Software Engineer acquired by SonarSource, leading to many R&D jobs being created in Singapore (Announcement)
- 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.

Sample PhD Student Placement

- Ridwan Shariffdeen, PhD NUS → Principal Research Scientist, SonarSource Singapore.
- Van Thuan Pham, PhD NUS → University of Melbourne, Australia, Senior Lecturer.
- Marcel Böhme, PhD NUS → Max-Planck Institute (MPI), Germany, faculty member.
- Xiang Gao, PhD NUS → Beihang University, China as Associate Professor.
- Shin Hwei Tan, PhD NUS → Concordia Univ, Canada, Chaired Associate Professor, Winner of ACM-W Rising Star Award, given to one early career female faculty member.
- Dawei Qi, PhD NUS → CTO, Shenzhen Secidea Network Security Tech. Co. Ltd.
- Zhiyu Fan, PhD NUS → Senior Researcher, Microsoft Research Cambridge, UK.

Recent Invited Lectures and Keynotes

- Keynote, Software Engineering for Machine Learning Applications (SEMLA) Symposium, Montreal Canada, 2025.
- Keynote, 16th International Conference on Internetware, Trondheim, Norway, 2025.
- Distinguished Lectures at Max Planck Institute, KAIST Korea, TU Delft Netherlands
- Invited Award Talk, International Conference on Software Engineering (ICSE), May 23.
- Invited Tutorial, Embedded Systems Week, October 2022.
- *Past Keynotes*: 17th Innovations in Software Engineering Conference (ISEC) 24, 27th Asia-Pacific Software Engg. Conf. (APSEC) 20, 4th IEEE/ACM Intl. Conf on Mobile Software Engg. and Systems (MobileSoft) 17, 21st Intl Symp on Real-time Computing.

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

- Introduced several courses including Software Testing, Software Security.

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