	Abhik ROYCHOUDHURY abhik@comp.nus.edu.sg +65 6516 8939 https://www.comp.nus.edu.sg/~abhik	Professor, National University of Singapore Director, National Satellite of Excellence in Trustworthy Software Systems Lead PI of Singapore Cyber-security Consortium

Research Interests

- Software Security, Trustworthy Systems, Program Analysis.

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).
- Vice Dean of Graduate Studies overseeing ~500 graduate students (2013-16).
- Associate Professor, Computer Science Department (2007-2014).
- Assistant Professor, Computer Science Department (2001-2007).

Current Projects and Initiatives

- National Satellite of Excellence in Trustworthy Software Systems, Director and Lead PI, $12M, 2019-23.
- Trustworthy Systems from Un-trusted Component Amalgamations, Lead PI, funded by National Research Foundation Singapore, 2015 – 2020, SGD 6.1M.
- Self-Healing Software, Office of Naval Research, USA, Sole PI, 2018-20, USD120K.
- Singapore Cyber-security Consortium, Lead PI, 2016-22, SGD 4.8M, ~50 member companies; helped set up this first Consortium in Computer Science at Singapore.

Selected Publications

- SemFix: Program Repair via Semantic Analysis, HDT Nguyen, D Qi, A Roychoudhury, S Chandra, ICSE 2013.
- Coverage-based Greybox Fuzzing as Markov Chain, M Böhme, VT Pham, A Roychoudhury, CCS 2016.
- Angelix: Scalable Multi-line Program Patch Synthesis via Symbolic Analysis, S Mechtaev, J Yi and A Roychoudhury, ICSE 2016.

Recent Student Placement

- Sergey Mechtaev, PhD NUS 2018 -> University College London, UK as Lecturer (2018).
- Shin Hwei Tan, PhD NUS 2018 -> SUSTech, China, as Assistant Professor (2018).
- Marcel Böhme, PhD NUS 2014 -> Monash University, Australia as Lecturer (2018).
- Sudipta Chattopadhyay, PhD NUS 2014 -> Assistant Professor at SUTD since 2017.

Teaching

- Introduced several courses at NUS, including Software security.
- Authored a textbook "Embedded Systems and Software Validation", Elsevier in 2009. Translated to Chinese by Tsinghua University Press in 2011-12.

Recent Invited Talks and Keynotes

- Distinguished Lectures at various universities including Max Planck Institute (MPI) in 2019, University of Luxembourg (2017) and Peking University (2017).
- Conference Keynote at 25th Australasian Software Engineering Conference 2018, 4th IEEE/ACM Intl. Conference on Mobile Software Engineering and Systems (MobileSoft) 2017, 21st Intl. Symposium on Real-time Computing (ISORC) 2018, …
- Keynote KLEE Workshop on Symbolic Execution 2018, Imperial College London.

Awards and Honors

- ACM SIGSOFT Outstanding Doctoral Dissertation Award 2019, given to Sergey Mechtaev for PhD thesis "Semantic Program Repair" from NUS, supervised by Abhik Roychoudhury.
- ACM SIGSOFT distinguished paper award FSE09
- Distinguished reviewer award ASE 2018.
- ACM Distinguished Speaker 2013-19.
- IBM Faculty Award 2009.

Translational Impact

- [AFLFast](#) and AFLGo as extended grey-box fuzzing tools, built on top of AFL, for detecting program vulnerabilities. AFLFast has been integrated to the regular AFL distribution after significant discussion within the AFL user group. Extensively working with Google Brain to transfer fuzzing technologies to practice.
- [Angelix](#) tool for automated repair of C programs using symbolic execution, has been used for intelligent tutoring systems to teach programming to large cross-sections of students in India, in collaboration with Indian Institute of Technology (IIT) Kanpur.
- [Corebench](#), a benchmark suite of realistic regression errors has been widely used by the software engineering community for studying real-life complex regression errors.

Recent Professional Service

- General chair ACM SIGSOFT FSE 2022.
- Chair, Communications of ACM (CACM) Special Section on East Asia and Oceania.
- Program Committee (PC) chair ISSTA 2016.
- Co-organizer, Shonan Meeting on Fuzzing and Symbolic Execution, 2019.
- Co-organizer Dagstuhl Seminar on Program Repair 2017.
- Associate Editor, IEEE Transactions on Dependable and Secure Computing, Currently serving.
- Associate Editor, ACM Transactions on Software Engineering and Methodology, Currently serving.
- Associate Editor, IEEE Transactions on Software Engineering, 2014-18.